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ABSTRACT

This book is a compilation of selected papers on comprehension and critical reading that have appeared in the annual "Proceedings in Invitational Addresses, 1965," or have been published in the journals of the International Reading Association. The articles have been grouped under several headings: (1) the nature of comprehension in reading; (2) the developmental sequences and levels of comprehension as pupils progress from reading lines to reading between and beyond the lines; (3) the impact on reading which the nature of our American English language may have; (4) contextual clues as they apply to the reader's ability to grasp the ideas in passages; (5) barriers to comprehension; (6) instructional procedures; (7) critical reading; and (8) significantly related articles which do not fall exactly into any of the seven preceding categories and which have only an oblique relationship to comprehension. The book concludes with a selected bibliography of articles that have some relation to comprehension but do not deal directly with it. (Author/WR)

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DEVELOPING COMPREHENSION
Including Critical Reading

compiled by Mildred A. Dawson

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The International Reading Association attempts, through its publications, to provide a forum for a wide spectrum of opinion on reading. This policy permits divergent viewpoints without assuming the endorsement of the Association.

INTRODUCTION

MAN communicates, for the most part, through language. He speaks what he wishes others to hear; he writes what he intends others (or himself later) to read. The message is the critical consideration. Regardless of how important word recognition may be, the comprehension of the intended message is truly essential. Not only should the reader be able to gain the literal meaning but he should understand the significance, realize the relative authenticity, and assess the possible application of the ideas he has read. Teachers must so direct their reading instruction that pupils gain the ability to find and the habit of seeking meaning in what they read.

This reprint is a compilation of selected papers on comprehension and critical reading that have appeared in the annual *Proceedings in Invitational Addresses, 1965*, or have been published in the journals of the International Reading Association. Thus may teachers and other interested readers have a convenient source of guidance and help in developing and improving students' ability to comprehend what is read.

The articles have been grouped under several headings: 1) the nature of comprehension in reading; 2) the developmental sequences and levels of comprehension as pupils progress from "reading lines" to reading between and beyond the lines; 3) the impact on reading which the nature of our American English language may have—word order and syntax, for instance; 4) contextual clues as they apply to the reader's ability to grasp the ideas in passages; 5) barriers to comprehension; 6) instructional procedures; 7) critical reading, which is at the uppermost level of comprehension; and 8) significantly related articles which do not fall exactly into any of the seven proceding categories and/or have only oblique relationship to comprehension.

The articles all apply to comprehension in general. Papers that relate to *study* as such and to *reading in the content subjects* have not been included—not that these special aspects of reading are not supremely important but that so much other than comprehension is involved. Study, for instance, involves the proper scheduling of time, the arrangement of an environment conducive to concentration, the building of technical vocabulary, the understanding of locational skills involved in using textbooks and references, and various other skills. Reading in the content subjects likewise calls for a variety of activities that involve much more than the comprehension of materials to be read. Study and reading in the content subjects, therefore, are areas left for later consideration.

This reprint concludes with a selected bibliography of articles that have some bearing on comprehension, but do not deal directly with it. By consulting the titles of the articles, the reader of this volume can undoubtedly find helpful supplementary ideas for teaching young people to comprehend well what they read.

MILDRED A. DAWSON
Compiler

GENERAL NATURE

The articles in this section of the reprint lay the foundation for the remaining sections by defining what comprehension is—a thinking process, a critical appraisal of the pertinency and value of the ideas read—and describing various phases of comprehension through a scholarly overview or "construct of comprehension." It is only as teachers realize all that comprehension involves that they can pose thought-provoking questions and direct learning activities that yield much more than the literal apprehension of ideas. If reading *is* thinking, then teachers should so deal with it by challenging pupils to delve deep into the significance and relative worth of the ideas they are reading.

If the users of this reprint get no farther than coverage of this one section in the book, they should still be stimulated to seek improvement in the guidance of the children and youth they teach. It is hoped, however, that this challenge will lead on to the reading of subsequent sections.

Reading as a Thinking Process

EDWARD PRATT*

A DISCUSSION OF READING as a thinking process is subject to the danger, on the one hand, of being developed in such a way that comprehension of printed matter seems an easy, facile, almost palpable accomplishment or, on the other hand, it may be developed as an extremely complicated, abstruse, or even esoteric ability. Perhaps a middle course can be attained avoiding the pitfalls of both oversimplification and the creation of an enigma.

Reading and Thinking

The words *read* and *think* are to be found in the speaking vocabularies of pre-school children, and they are encountered in the reading materials attempted by most children in the first two years of school. Both words, however, relate to processes which are difficult to describe. Identifying behavior as probably being reading rather than running, talking, or laughing is not difficult; but one may look at the page of a book without reading. According to Bond and Tinker, "A generation ago reading was considered to be a relatively simple process. Now it is recognized by both authorities in reading and by experienced teachers to be a very complex process."[1] Since *thinking* is also a covert act, we can only infer that it has occurred on the basis of overt behavior. Defining thinking as a process presents some difficulty. Klausmeier and Goodwin say, "Thinking has been an interest of mankind for a long time, in part because he can engage in the process but cannot define it. In this regard thinking is like learning. In fact thinking may be considered a mental activity that is essential to learning most outcomes. Despite the apparent simplicity, thinking is as complex as learning itself."[2]

It seems that consideration of reading as a thinking process, if treated fully, is an appropriate subject for an entire book, or at least a major section of one. To bring the topic within the scope of this paper, development of a perspective for the relationship of thinking to reading *above the level of sentences and paragraphs* will be stressed. This means that the area of concern will be *how the thinking process is involved when the*

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[1] Guy L. Bond and Miles A. Tinker. *Reading Difficulties: Their Diagnosis and Correction.* New York: Appleton-Century-Crofts, 1957, p. 18.

[2] Herbert J. Klausmeier and William Goodwin. *Learning and Human Abilities.* New York: Harper and Row, 1966, p. 257.

**Vistas in Reading, IRA Proceedings, 11,* Part 1. (1966), 52-55.

primary-grade child tries to construct the meaning for major sections or for the entirety of a story or an article.

Lexical and Syntactical Levels

Before considering this major issue, it is necessary to recognize the fact that meaning and thought relevant to the whole story or article are most certainly affected by meaning at the word or lexical level and by meaning at the syntactical and paragraph levels. The reader will need to have attained a level of linguistic sophistication which insures that he will know what is referred to by the word symbols that are used and that he will functionally respond to grammatical relationships inherent in the writing. Writers of materials for primary-grade children in the United States usually attempt to exercise control over these linguistic elements to the extent that the child for whom English is the vernacular and who has developed moderate speaking and listening ability should have the requisite linguistic facility. Obviously, the degree to which this assumpton is correct varies with authors and with children who attempt the reading. We should remember, however, that just because a child knows what a symbol stands for and because he is able to cope with the grammatical relationships does not imply that appropriate mental activity is in progress when his eyes are focused on the page of a book. For the purposes of this presentation, however, let us suppose that word meaning, functional grammar, and sentence and paragraph meaning are not crucial problems for the kind of reading material to be experienced by children in the primary grades.

Patterns in Thought

Thought is limited by one's ability to combine, transpose, augment, and diminish ideas. This suggests that whether one is using the thought process for interpretation or for expression he puts ideas together and establishes an organization that is meaningful for him, he embellishes these ideas from his background of knowledge, and he reorganizes them to combine the compounded and augmented ideas so that they come to represent what he understands regarding the subject which stimulated thought.

In making application of thought in reading we might observe that the thoughtful reader *conceives* ideas inherent in the author's presentation, gains *insight* by bringing his own experience into interaction with what he believes the author is suggesting, and achieves *understanding* by extracting what to him is the essence of the combination of the author's expression and his own experience. The thought process might be considered a progression from conception to insight to understanding.

If thought is to occur in association with reading, the child must do more than name words and apply appropriate expressional groupings. Thinking must be stimulated by concern on the part of the reader. This concern on the part of the reader is commonly called *purpose* in most materials related to reading instruction. Thought is stimulated by the child's own purpose, not by an artificial one imposed by the teacher. The teacher may identify a purpose and lead him to accept it, but until the child makes it his own purpose, it will not be the stimulus that triggers thought.

Patterns in Reading Materials

Any consideration of children's purposes for reading should involve a sharp distinction between narrative and expository writing. Subject matter or study type materials require a different pattern of thought than that used for narrative. Narrative has a distinctive organizational pattern involving a theme expressed through setting, plot, and characters. The purpose for reading this type of writing is to enjoy the story. Exposition also has a distinctive organizational pattern involving the development of an idea through explanation and development of major related ideas which are in turn developed through supporting ideas and details. The purpose for reading this type of writing is to extend one's knowledge of the particular topic. To fail to help the child establish a knowledge of the inherent differences in these basic types of reading material, to treat a story as if it were a topic for study, is confusing and limits the effectiveness of the child's attempts to make reading a thought process.

How is the thinking process involved when the child attempts to read a story? We should identify the thought process in this instance as being an example of convergent thinking in that there is a pattern or structure involved and there is an appropriate interpretation based on limitations inherent in the linguistic symbolization used by the author. The pattern which the author follows in relating the story, and which the reader should use to arrive at the appropriate interpretation, is the one which is common to narrative writing.

The thinking process of the reader should be so ordered that he responds to the author's presentation and combines ideas gained with his own related ideas to arrive at an understanding of (1) the setting, (2) the plot structure (including sequence of events and climax), (3) the characterization, and (4) the theme. As the reader matures in his experience with narrative, these enumerated elements of the pattern should be acquired with less attention to specific items and more attention on the integrated story pattern. In the early stages of reading development, however, it is important that the novice reader devote conscious effort to identifying ideas associated with story elements. The strength of some stories will be in the characterization, for some it will be in the plot, and for others the setting may be of prime importance. All stories, however, will present their themes through some arrangement and weighting of these elements.

Thoughts about the setting ought to establish the time, place, and conditions for the action of the story. Some indication of the setting should be conceived at the outset of the reading, but clarification of these ideas should be achieved as the reading progresses. The initial conception should also be enhanced by what the reader knows about similar settings. The plot or sequence of events will have to be conceived as taking place in this setting, and the characters through whom the plot is developed will need to be conceived in relation to both plot and setting. Thoughts about the plot should be carried along during the reading and used to clarify character motives and, ultimately, the theme. As a part of thought concerning plot structure the reader should identify events as being supportive of broader elements of the plot such as conflict, suspense, and climax. Usually the focal point for organizing thought about a story is the characterization. It is the characters who give life and significance to the theme of the story by performing the action within the story setting. Ideas about the traits of characters will be acquired as a developmental process during the reading. The actions of the characters, pictorial or verbal descriptions of them, and what the author has them say should contribute to the reader's conception of them. Relation of ideas concerning plot and setting to characterization should provide ideas about character motives and probable behavior as the story develops. Integration of ideas concerning setting, plot, and characterization should suggest the theme which the author has developed. If the reader's conception of other story elements is faulty, the theme may be difficult to identify and appreciate.

Instructional procedures can hinder the reader rather than help him in his effort to think through the organizational pattern of the story as he reads. Overemphasis on identification of sequential events in a story is detrimental. Some instructional materials suggest long lists of events to be identified by children for a comparatively short story. Another procedure which causes difficulty is the discussion of initial segments of the story before the reader has an opportunity to establish ideas about plot and characterization. Use of instructional materials which contain stories that are very weak in characterization also limits full development of thought. Even primary grade children should use materials which help them to see that there is more to a story than the action that takes place.

Stimulation of Thought

As stated earlier, the basic purpose for reading any story is to enjoy it; without this purpose the reading is perfunctory. Enjoyment comes as the story unfolds. Delight in the development of a humorous situation, the excitement of events that build to a climax, and empathy that is developed for characters, are some of the ways in which satisfaction with a story is achieved. Enjoyment is apt to be greatest when we are able to complete the reading of the story without interruption. It may not be possible to read lengthy stories at one sitting. The desire for clozure, however, is evidenced by the adult who does not want to put a good book down although he may have other pressing matters to which he should give his attention. It is also evidenced by the child who continues reading beyond the place where the teacher asked him to stop, even though he may have a strong desire to conform to her wishes. Stimulation which comes from purpose is a precious thing which we should try to foster to the fullest—adequate thinking is impossible without it.

Despite the importance of purpose to thinking, some of our instructional procedures thwart purpose rather than facilitate it. One instructional procedure which interferes with the enjoyment of a story is the extended introduction which is ostensibly designed to create interest. It is the author's job to write an interesting story, not the job of the teacher to create interest in a story that is not inherently enjoyable. Extended introductions are apt also to disclose story elements to such an extent that little is left except to read to answer questions posed by the teacher. From the child's point of view, such reading leaves much to be desired. It is usually tolerated rather than enjoyed. Since stories involve a segment of real or imagined life, the child will usually be able to project. Living the story as it develops is basic to its enjoyment.

A second instructional procedure which thwarts enjoyment is the fragmentation of a story. Story development that occurs on one or two pages is usually meagre. If the child begins to enjoy the story but is required to stop his reading for discussion and oral reading of a page or two, his zest for the reading is dampened to some degree. Reading only bits of stories at a time also mitigates against the early development of ability to read trade books, because the child is uncertain of his ability to read lengthy stories.

Criticism of story introductions and story sectioning should not be construed as a plea for abolishment of these procedures. They should be employed where they are needed to develop reading skills, but they should be used only to the extent necessary for a given child or group of children. The caution suggested here is that we realize that greatest enjoyment comes from savoring the story as it progresses and completing it, if possible, without interruption.

Instruction in the reading of expository materials is chiefly a problem for the intermediate grades. Listening activities in the primary grades, however, should include exposure to exposition; and identification of main ideas supporting ideas, and details should be initiated. Where this is done, the material should be related to on-going study so that its purpose is to expand knowledge.

Summary

Considered on the level of meaning for an entire story or article, thought is concerned with developing a synthesis according to the organizational pattern common to the type of writing in question. Primary grade children will be chiefly concerned with narrative which involves setting, plot, and characterization as elements to be synthesized into a pattern which will express a theme. The thought required for developing this synthesis will be limited by the reader's ability to combine his conception of an author's ideas with his own related information and arrive at an understanding abstracted from both. The thought process is used in many settings; reading is one of them.

The Good Reader Thinks Critically

NILA BANTON SMITH*

PUT THIS question to any group of people — teachers or laymen, "What are the basic skills in reading?" "Comprehension" will come back to you with reverberatory frequency. This big blanket term of "comprehension" is used generally and glibly to connotate a so-called fundamental reading skill. Yet, may we be so bold as to ask, "Is comprehension a reading skill?" *Is* this many-sided, complex act a skill in the sense that a certain stroke in tennis is a skill; and as such, subject to development largely through exercises based on reading? Or is comprehension, in its broader sense, a welter of processes, abilities, attitudes and purposes which one brings to bear upon any situation in which he wishes to derive meanings from language symbols, whether spoken or written? If the answer to this latter question is in the affirmative, may we ask if comprehension in reading is subject in its development to all of those factors which affect growth in the ability to work with language meanings, rather than something definite and specific and different to be taught solely in connection with reading? And might it help to clarify things if we talk about "meanings in reading" instead of using the equivocal and ambiguous term of "comprehension" as designating a special reading skill? "Meanings" is the term which will be given preference throughout the remainder of this discussion.

What are the prerequisites to high-level understanding of language meanings? First, one must have a wealth of concepts to draw upon in bringing meanings to the language symbols. Second, one must have the inclination, habit and ability to use his higher thinking processes, and to adapt them to different contents and purposes; and third, which probably should have been first, one needs to have facility in language expression, and to possess an extensive meaningful vocabulary. These are the fundamentals which form the matrix out of which understandings grow, be it in reading, oral expression, graphs, charts or pictures. Possibly then, the best way to develop "comprehension" is to direct a major amount of attention toward building the groundwork rather than depending so largely upon furbishing the cupola.

Concepts and Meanings

Let's first consider the role that concepts have to play in developing ability to get meanings from reading.

In order to understand printed symbols, the child must bring to the page a wealth of vivid concepts. How are these concepts derived? Experience is the source out of which con-

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**The Reading Teacher, 15,* (December 1961), 162-171.

cepts emerge. A concept is the residue which is left with us as a result of experience; it is the condensation of experience which takes definite form in our mind. Insofar as reading is concerned, then, concepts are crystallized experience which we draw upon in filling empty shells of word symbols with kernels of meaning.

Studies have repeatedly shown the effect of concept-building upon reading success.

Trips and Excursions. Cantor (1) conducted a very interesting study to ascertain the value of excursions to kindergarten children as a means of preparing them for first-grade reading. During the course of her investigation she used four methods of checking: (1) a critical summary of excursions taken according to previously established criteria; (2) an analysis of the concept-building characteristics of the excursions with relation to a standard vocabulary; (3) a comparison of the topical and vocabulary demands of primary readers with kindergarten preparation; (4) a check during the first year of primary work done by children who had had this excursion experience in their kindergarten year.

This investigator found that two hundred and four concepts were given background in experience through nine excursions taken, and that a correlation had been effected between the vocabulary and concept demands of primary reading, and the vocabulary and concept supply of nine typical kindergarten excursions. The children who had taken these excursions in kindergarten were also checked for reading readiness and reading achievement in first grade. Cantor's conclusion in regard to the effect of the excursions on learning to read are: "From results of scientific tests administered in the primary year and the comparisons made with reading readiness in other schools, it seems probable that the children (who had the excursions) definitely profited from the comprehensive program of kindergarten excursions experienced in their kindergarten year."

At a higher level, Ledbetter (2) found in his investigation with eleventh-grade pupils that, "meanings or concepts present more difficulties to the average student than vocabulary, sentence length, or sentence structure."

One of the most basic functions of a teacher of reading is that of insuring experiences out of which concepts will grow, and then guiding these experiences to fruition in concept development. To some, such a statement may seem trite, indeed. Yet, up to this time, we have barely tapped the possibilities of utilizing experiential background in developing concepts as a foundation for meaningful reading.

First-Hand Experiences. While it is desirable that more emphasis be placed upon large, planned first-hand experiences in general, it is urgent that more experiential teaching be done "on the spot" as needs arise in reading and other areas. As an example, let us consider the case of the teacher who, upon a certain occasion, placed this sentence on the bulletin board: "This is a chilly morning." Her pupils, who came from Mexican homes, gathered around the bulletin board and tried to read the message. The teacher helped them with the pronunciation of the new word *chilly*. Then she asked what the sentence meant. All of them thought that the sentence told them in effect that this was a morning on which they should eat food seasoned with chili peppers. The teacher then explained that chilly when spelled as it was in this sentence and when used to describe a morning meant cold. She took them to the door and momentarily let them experience the sensation of feeling the cool, crisp air as it rushed against their bare faces and through their clothing. Undoubtedly, after this experience, these children sensed the full and correct meaning of the symbol for *chilly* whenever they encountered it in a phrase pertaining to temperature.

As teachers become increasingly sensitive to the part which experience plays in establishing meaningful concepts to use in filling in word symbols, they will more frequently take the time and trouble to provide experiences which will equip children to bring to new word symbols, clear and accurate understandings of meanings. This is one way "to develop comprehension."

Visual Aids. First-hand experiences are not always practical but visual aids of one kind or another are nearly always available and these serve well in concept-building. Tom, a sixth-grade boy, was reading about the school days of a Greek scholar. The story plot hinged upon a lost stylus. Tom was asked if he knew what a stylus was. "Yes," he replied, "a man that cuts women's hair." In this case Tom brought his own experience to the printed symbol, but it didn't work, so he was given another experience through the use of a visual aid. He was shown the picture of a stylus and its use was explained. This took so much time that Tom couldn't go on reading the story that day but he read it the next day and as he did so satisfying meanings leapt forth from printed pages which might otherwise have imparted only perplexing confusions.

In the rush of things, we often think we haven't time to engage in many first-hand experiences or to bother with the use of visual aids, explanation and discussion. Possibly building useful concepts which will serve the child in his reading throughout life is more important than covering a few more pages "in the book."

Thinking and Meanings

What do we do with meanings that we derive from listening to a lecture, a conversation, a radio or television broadcast? If we're not accustomed to doing much thinking for ourselves, we accept what is said and perhaps recall it and quote it to others. If we are keen and alert and make the fullest use of our mental capacities, we do many other things with these meanings: we question, reason, compare, draw inferences, generalize, interject original ideas, seek interaction of these ideas with others and draw independent conclusions.

Recent investigators who have attempted to analyze the different aspects of the reading act include the use of mental processes as basic factors. Johnson (3) concluded that these abilities are of prime importance: "(a) seeing relationships between words and ideas; (b) evaluating an author's statements; (c) drawing inferences; (d) developing a problem and adjusting the type of reading to fulfill the purpose."

Artley (4) in his study to determine specific abilities which contribute most in comprehension of the social studies, named these as three of the most important: "the ability to interpret; to obtain facts; to organize."

Young (5) phrased one of the conclusions to his study in a most convincing way when he said, "The chief element in reading is *thinking,* not motor or mechanical processes of eye movements, eye-span, vocalization, and the like."

Thought Questions vs. Memory Questions

It is regrettable that the most frequent experience which children are ordinarily given in working with meanings in reading is one in which not much thinking is done. It is the type in which the children simply are asked to give back some statement or word in the text. "What was Mary playing with?" And the text says, "Mary was playing with her dolls." "What was Tommy doing?" And the sentence that had just been read said, quite definitely, "Tommy was playing with his fire truck."

It is easy to ask such questions. Questions of such type do not require much mental activity on the part of the one who asks them and little or no thinking on the part of pupils. Such questions undoubtedly give practice in recalling and reproducing statements or facts given in the text. This does have a place in detailed factual reading in which the reader wishes to memorize exact minutiae. It is questionable, however, if such exercises really aid children in gleaning the types of meanings they will need in using reading to enrich their lives in the fuller sense.

Through continued practice, however, children often become so glib in answering this reproduction type of question that they convey the impression of having achieved a high degree of excellency in "comprehension." A thirteen-year-old boy was recently sent to the writer for diagnosis. He had above-average intelligence and was considered to be "a very good reader," but was failing in his other studies. As a part of the diagnosis, the boy was asked to read the story of Johnny Appleseed. A class of graduate students observed and also read the story. When the boy had finished, he was asked several questions which could be answered by re-stating what had been said directly in the text, as indicated below:

How long ago did Johnny Appleseed live?

"More than a hundred years ago."

What was his real name?

"Jonathan Chapman."

How did he spend his time?

"Planting apple trees."

These and additional questions of the reproduction type were asked and

Larry answered every one of them unerringly in the words of the book.

"Do you think Larry needs help in 'comprehension?' " the graduate class was asked. "No," came the unanimous response. "His 'comprehension' is perfect!"

Then came some questions which required Larry to do some *thinking,* questions which necessitated *doing* something with meanings gleaned from the story, doing things that called for the use of several mental processes.

"Why did Johnny choose a spot deep in the wilderness where the settlers had not yet come to plant his trees?"

"He wanted to be alone while he was working," was the answer.

Larry had missed a very important implication in drawing his conclusion as to why Johnny went into the wilderness ahead of the settlers to plant the trees. His real reason for planting the trees before the settlers arrived was, of course, so that the trees would grow and bear fruit by the time the settlers moved in. Larry's reason made Johnny an unsocial sort of person who didn't want anyone around him while he was working.

Several other questions of the thinking type were asked. Larry's replies to all of them were equally faulty. And Larry is only one of hundreds of *intelligent* pupils who learn the superficial knack of giving back what the text says, and never tap the significance of meanings which can be gleaned only through the use of mental processes of a higher type than are required in merely reciting statements that are given in the book.

Discussion Questions. One of the most productive ways of developing ability to get meanings in reading is through discussion in which the teacher takes part and makes her special contribution by throwing in a question or a statement here and there which stimulates cause and effect reasoning, points up the necessity for making comparisons, drawing inferences, arriving at conclusions, gathering generalizations.

As an example of such a discussion, one might describe a situation recently observed in a third-grade classroom. The children had read a story about Fred, a boy who visited his Uncle Bill. The uncle was a sheep-rancher and lived in a covered wagon in the foothills. During the first few days of his visit, Fred was concerned about his uncle's shepherd dogs, who stayed out in the stormy weather with the sheep night and day. So one night Uncle Bill took Fred out while a storm was raging. He called the dogs. They appeared from the midst of the herd of sheep, but they "did not want to leave their wooly hiding place." Fred said, "All right. I won't worry about them any more."

Children and teacher discussed the story as they went along and also after it was finished. Everyone entered into the plot with interest and enthusiasm and relived the experiences of the characters. As all of this was taking place, however, the teacher kept uppermost in her mind the significance of stimulating children's *thinking* in working with meanings derived from their reading. Now and then at appropriate times she asked questions to which there were no answers directly in the text—questions which called for inferences, generalizations, comparisons, reasoning. A few examples will be given:

"In what part of the country do you think this story took place?" The children referred to details in the text and pictures and soon arrived at the conclusion that the setting of the story was in the Rocky Mountain region.

"Why do you suppose one of the dogs was called Taffy?"

None of these children had had the experience of seeing warm taffy pulled and noting its golden-brown color when in this elastic state. The colors which they associated with taffy were greens, blues, pinks and yellows which they found in the bits of confection contained in the salt-water taffy boxes that their parents had brought from Atlantic City. Lacking the experience necessary for this concept, the teacher told them about taffy in its natural state and compared its color to Tom's sweater and Jane's hair. The children then easily reasoned why one of the dogs was called "Taffy."

"Compare the way that Fred felt at the beginning and end of the story. Why did he change?"

At no point in the story does the text tell how Fred felt, nor is there any statement in regard to why he changed. The children, however, were able to find tell-tale phrases and words here and there that indicated how worried Fred was all through the early part of the story, and others which revealed his satisfaction and peace of mind toward the end of the story. Just one major generalization on their part disclosed the cause of this change.

And thus it is that a wise teacher can cultivate thinking in connection with children's reading dozens of times every day. And thus it is that meanings take form and that the significance of printed symbols becomes fully apparent.

Evaluating and Judging. Critical reading is another aspect of the reading-for-meanings area of development. Critical reading calls for additional steps in thinking. It involves getting the facts and interpreting deeper meanings as discussed above. It also makes use of the personal judgment of the reader in deciding upon validity of the material. In critical reading the reader evaluates and passes judgment upon the purpose, the fair-mindedness, the bias, the truthfulness of statements made in the text.

Jean was reading a story in a pre-primer about children who made a playhouse by spreading newspapers across the backs of two chairs. Among other things, the story said that Puff, the cat, played with them too. He ran about on top of the playhouse. Jean stopped in her reading and remarked, "Puff couldn't have run on top of this playhouse, because it was made of newspapers." Jean was doing critical reading.

Tommy, a second-grader, read these statements in some arithmetic material that he was given. "Nancy went to the store to get some milk. Milk was 12 cents a quart. She got two quarts. How much did she pay for it?"

"There's something wrong here," said Tommy. "Milk costs lots more than 12 cents. I paid 21 cents for a quart at our store yesterday." Tommy also was doing critical reading.

In this age of high-pressure salesmanship, through the use of printed material, much more emphasis should be placed on critical reading. It is of no small consequence these days that youth should be taught to look for slants and biases and tricks of the propagandists so that they may be in a position to judge the validity of statements which they read in all printed material.

Primary teachers should recognize and commend critical evaluations such as those expressed by Jean and Tommy and encourage others "to think about what they read and try to decide if it could be true." Such suggestions, of course, should be made in connection with realistic or factual material. It will do no harm, however, even when reading the old fairy tales if a child or teacher interjects occasionally, "of course, this couldn't really have happened, but it's fun to pretend that it did."

While we need to rely largely upon class discussion and skillful questions to develop critical reading in the primary grades, more direct work can be done in the upper grades. Some suggestions are given below.

Have the children bring in newspapers from different publishers, compare reports of writers on the same event and note variations. Have them pass judgment on the reputation of the newspaper for "uncolored reports" or the reputation of the news writer for presenting accurate facts. Have them pick out statements that are opinions and statements that are facts.

Ask them to bring in articles from the various columnists and discuss each one in terms of personal opinion versus facts, bias, radical ideas and attempts at sensationalism. The same procedure can be used with magazine articles, pamphlets and books.

In addition to experiences in evaluating as indicated above, students should become acquainted with methods and tricks used by the propagandists. Each member of the group may bring in a clipping of an advertisement, an excerpt from a speech made during a political campaign, an article on any topic in which the writer is trying to influence readers in their thinking or actions.

Let each one read his selection aloud. Following the reading, encourage free discussion concerning the writer's motive and the techniques that he is using to accomplish it.

These are only a few suggestions for developing critical reading which again, in essence, is critical thinking. Indeed, the emphasis in this entire section is on the necessity of developing children's ability to enter into mental interaction with meanings embedded in printed symbols, both those that are immediately apparent and those that lurk behind the black and white symbols. Perhaps the import of this section on meanings can best be summed up in a simple three-word definition of reading which Edward L. Thorndike stated many years ago, "Reading is thinking."

Language and Meanings

Many books have been written on Language and Meanings. Too little has been written on the triangular relationship between language, meanings and reading. Reading is the same as any other language expression except that it is a one-sided communication, a monologue, if you will. You can't talk back and forth with it except as you interact with the symbol meanings in your thinking. But the same *language* factors which enable you to get meanings from spoken language operate in helping you to get meanings from printed language.

Several investigations have shown relationships between abilities in language and ability to get meanings in reading. Goodenough (6) found a correlation of .79 between ability to understand and explain meanings of words in a vocabulary test and reading ability.

Gates (7) found that the most important prognosis measure to use in predicting progress in beginning reading was the ability to grasp the substance of a story told to the children. Russell (8) found a correlation of .80 between reading comprehension and word meaning. Young (5) found that there is an intimate relationship between reading comprehension and hearing comprehension. Artly (4) and Davis (9) both found a knowledge of word meanings to be an extremely important factor in reading.

And so it is that we are not lacking in evidence of the significance of the language factors in reading. In fact, growth in reading is dependent upon growth in language. Children who do well in oral and written expression, spelling and vocabulary, usually do well in reading. All of these so-called "subjects" deal with language symbols, all are part of the same constellation, each reinforces and contributes to the other. While the teacher is developing growth in any phase of language, she is also developing "comprehension" in reading.

From the standpoint of *meanings* in reading, however, a meaningful vocabulary is probably the most important of the several language factors. One of our chief concerns then is "how can a meaningful vocabulary be developed?" The answers are found in an abundance of experiences in which many and different words are inherent: through association with teachers and parents who are willing to answer questions and explain, and who, themselves, possess and use an extensive vocabulary; through ample opportunities to talk, discuss, ask and answer questions. These are the ingredients which, when mixed together and blended, result in a large stock of words to which varying significations may be attached . according to the content and circumstances in which they are used.

Of course, reading contributes its share in building vocabulary also. The child brings vocabulary and meanings to the printed page, but he also derives vocabulary and meanings from reading, and this is the juncture at which the reading teacher needs to be especially alert. She needs to make the most of reading content in developing word meanings and calling children's attention to the chameleon-like properties of words as they are fitted into their different contexts.

The multiple meaning words probably cause the most confusion in reading, particularly as their meanings become more abstract. When a child meets a word in text in its first, plain-sense meaning, it usually represents a fairly concrete idea to him, particularly if it is one which he has previously encountered experientially.

As an example, consider the word "capital." The child may have his first experience with this word while playing with his A.B.C. blocks, when someone calls his attention to "capital H" on the side of the block and "small h" on the other side. He soon learns the difference between "capital" letters and "small" letters and in this sense "capital" has a real, concrete meaning for him. A little later in his life he may take a trip to the capital of the state with his father and mother. Here he sees a building with a large round dome and many steps leading up to it, and is told that this is the capitol building where the law-making bodies sit while discussing the affairs of state. After this, when he reads that a certain city is the capital of a state, he has a fairly concrete concept of the meaning of the sentence. As he passes the local bank he reads on the window, "Capital $600,000." Now he associates "capital" with a bank and money. In all of these cases, "capital" has been tied to a concrete object—a letter, a city, a bank, and while the child needs some additional help in getting the complete meaning of a capital city or the capital of a bank, he usually is not puzzled and confused when he encounters these terms in print. But the real trouble begins when, as he advances in reading, he finds "capital" used in describing more generalized and abstract nouns as a "capital error;" "capital goods;" "capital punishment." The most remote level of abstraction is reached when he meets the word as part of a term which represents an idea that embraces a vast expanse of territory, that is; "capital and labor." The shift to this highly generalized use of the word "capital" is quite a long stride to take. If left alone to struggle with the interpretation of this meaning of "capital," unaided by mental interaction and clarifying discussion, the pupil may leave his reading with only a vague or partial understanding of the meanings involved; or his understanding may be definitely erroneous; or it may be highly colored by emotive language with which the word was surrounded. Yet this word, used in this sense, has much to do with the structure, thought and feeling of American society and, as such, deserves careful study and interpretation.

The teacher, of course, should be keenly aware of different levels of abstraction and ever on the alert for shifts from one level to another as children meet such words in their reading. She will invite the class as a whole to study such a word and to tell what it means to them in terms of their individual experiences. Out of all this, they will then try to construct a common meaning.

Undoubtedly as we come more generally to understand the nature of meanings, the discussion and clarification of different levels of abstraction will be considered one of the most important responsibilities of the teacher of reading.

In concluding this article, it might be said that its objectives have been two-fold: first to stimulate fresh thinking about the old topic of "comprehension;" and second, to delineate the true fundamentals of meaningful reading—(1) concepts, (2) linguistic ability, and (3) the use of the thinking processes.

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A Construct of Comprehension

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Wisdom is the principal thing; *therefore* get wisdom:
and with all thy getting get understanding.
Proverbs: 4:7

TAKEN out of context, this biblical admonition, ". . . with all thy getting get understanding," could well apply today to our concept of teaching reading. In fact, it has become so important that we like to speculate about the mental steps involved in the process of comprehending a passage or establishing rapport with an author.

What, then, is comprehension? What is involved in the mental processes that begin with the reader's first glance at a printed passage and end with his understanding of the message the writer is trying to convey *via* the printed page?

There are many terms that we use rather glibly, yet when we are asked to define them we are "hard put to it" as the old expression goes. Each of us must build a theory or construct of this complex process of bringing meaning to the printed page so that the reader can establish rapport with an author. Thus if an author or speaker wishes to communicate with a reader or listener, he must code his thoughts, concepts, ideas, etc. into a symbol system that will be understandable to the reader or listener. A decoding process then takes place. The reader or listener must decode the message into a symbol system that is also meaningful. Therefore, the more congruent these two signal systems, the more effective will be the communication process; rapport will thus be established between author and reader, between speaker and listener.

Before 1915, when early emphasis in reading was on its oral aspects, not much attention was paid to comprehension. In fact the term is rarely found in the literature. But many textbooks frequently admonished pupils as to the art of reading aloud with the art of elocution which also included *perspicuity,* defined by Webster as "the quality of being clear to the understanding; lucidity in expression or the development of ideas."

The term *comprehension* had many synonyms. Romanes,[1] in the latter part of the nineteenth century, called it the "power of assimilation." Abell[2] a decade later did use the term comprehension.

However, as late as 1916 Judd[3] and Gray[4] used the expression "quality of reading" to denote comprehension.

Finally in the Sixteenth Yearbook Gray[4] used the term *comprehension* to denote the obtaining of meaning through reading. Subsequent yearbooks and other publications devoted much more space and attention to the concept. Today *comprehension* is being emphasized as the major consideration in all reading.

In order to give a backdrop to a construct of comprehension, let us review what other writers have said concerning the nature of comprehension.

Lindley Murray[5] quotes Beattie, "Children are not often taught to read with

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[1] George J. Romanes, *Mental Evolution in Animals* (New York: Appleton and Company, 1884), pp. 136-137.

[2] Adelaide M. Abell, "Rapid Reading: Advantage and Methods," *Educational Review,* Vol. 8, October 1894, pp. 283-286.

[3] Charles H. Judd, *Measuring the Work of the Public Schools,* Vol. 10, Cleveland Public Schools, The Survey Committee of the Cleveland Foundation, 1916, p. 153.

[4] William S. Gray, "The Relation of Silent Reading to Economy in Education," *Sixteenth Yearbook, Part I, National Society for the Study of Education,* Bloomington, Illinois, Public School Publishing Company, 1917, p. 28.

[5] Lindley Murray, *Introduction to the English Reader* (Pittsburgh: Spear and Eichbaum, 1916), p. V.

**Reading and Inquiry, IRA Proceedings, 10,* (1965), 59-61.

proper emphasis. . . . When books are put before them which they do not understand, it is impossible they should apply it properly. Let them therefore, read nothing but what is level to their capacity."

Samuel Kirkham[6] gives us some sage advice concerning the absurd practice of *verbalism* in reading:

> . . . for I would rather give you one useful idea, than fifty high-sounding words, the meaning of which you would probably be unable to comprehend. And I wish you particularly to remember, that I am all the while conversing with yourself, even you who are now reading these lines, and not with somebody else: therefore I presume you will not pursue the absurd and ridiculous practice of *reading* without *thinking;* . . . of merely pronouncing the words without paying any attention to their *meaning;* but I trust you will reflect upon every sentence you read, and endeavor, if possible, to comprehend the sense; for, if you do not exercise your mind, you would do better not to read at all.

John Wilson[7] comments on the use of punctuation marks as an aid to comprehension:

> . . . as oral speech has its tones and inflections, its pauses and its emphases, and other variations of voice to give greater expression to the thoughts which spoken words represent . . . so written or printed language is usually accompanied by marks or points, to enable the reader to comprehend at a glance the precise and determinate sense of the author—a sense which, without these marks, would in many instances be gathered only by an elaborate and painful process, and very often misunderstood.

Edmund Huey,[8] *The Psychology and Pedagogy of Reading* has some interesting perceptions concerning the reading process:

> We may safely conclude, then, that meanings in reading are mainly feeling reactions and motor attitudes attaching most intimately to or fused with the inner utterance of the words and especially of the sentences that are read.
>
> Practice in abstracting meaning, in grasping the essentials of a page's thought, has been little thought of in the reading lesson.
>
> Both the inner utterance and reading aloud are natural in the early years and are to be encouraged, but only when left thus free, to be dominated only by the purpose of getting and expressing meanings, and until the insidious thought of reading as word pronouncing is well worked out of our heads, it is well to place the emphasis strongly where it really belongs, on reading as thought getting, independently of expression.

An early attempt to list, in sequential steps, how meaning is acquired was given by Arthur W. Kallom:[9]

> The aim of silent reading is to teach pupils to obtain the thought from the printed page for himself. Silent reading is followed by a form of reproduction at a future time.
>
> Until recently the teacher of the upper elementary grades has not felt the importance of teaching silent reading. Even now it is very probable that she does not realize the full importance of this teaching. Reading oral or silent means the recognition of the printed word as a symbol and a correct interpretation of the symbol into a picture for which the symbol stands.
>
> This is not . . . a simple process. It may be analyzed into the following factors:
>
> "Factors in Silent Reading"
>
> 1. Correct visualization of each word.
> 2. Knowledge of the various meanings of each word.
> 3. Choice of the correct meaning as shown by context.
> 4. Forming of the correct relations between these meanings in order to interpret phrases and clauses.
> 5. Forming of the correct relations between phrases and clauses in order to interpret sentences and paragraphs.

It is interesting to note that the author stops with paragraph comprehension.

As late as 1955, Gerald A. Yoakam[10] had some interesting conclusions concerning an understanding of the term *comprehension:*

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[6] Samuel Kirkham, *English Grammar in Familiar Lectures,* accompanied by a compendium; Embracing a New Systematic Order of Passing, 2nd Edition (Harrisburg: Wiestling, 1924), p. 14.

[7] John Wilson, *A Treatise on English Punctuation* (Boston: Crosby, Nichols, and Company, 1858), pp. 1-2.

[8] Edmund Huey, *The Psychology and Pedagogy of Reading* (New York: The MacMillan Company, 1916), pp. 167, 302, and 249-350.

[9] Arthur W. Kallom, "Reproduction as a Measure of Reading Ability," *Journal of Educational Research,* Vol. 1 (May 1920), pp. 359-368.

[10] Gerald A. Yoakam, *Basal Reading Instruction* (New York: McGraw-Hill Book Company, 1955), pp. 63-64.

> The term *comprehension*, which is used to represent the general comprehension of meaning in reading, has never been completely described. Various attempts have been made to describe and define it. It is usually defined as the process of grasping the meaning of spoken or written language. It seems likely that comprehension is a complex which involves the mental process of recognition, or association of meaning, evaluation of suggested meaning, selection of the correct meaning, and generalization based on the meanings of details involved in a context. Some writers would add the anticipation of meaning to this complex. Anticipation of meanings is the ability of the reader to orient himself to sentences and paragraphs so that he can quickly adjust himself to the thought presented in terms of his past experience and in terms of the reasonableness of the statements which are being made.

George Spache[11] has given us the best theoretical model or construct which describes the operation of the basic intellectual processes in the act of reading.

These processes are listed as a column on the left side of a two-dimensional chart:

1. Cognition—recognition of information
2. Memory—retention of information
3. Divergent Production—logical, creative ideas
4. Convergent Production—conclusions, inductive thinking
5. Evaluation—critical thinking

At the top of the chart there is a row of items, namely, Unit (word), Class (sentence), Relations (the interrelationships of sentences), Systems (arrangements of sentences we call paragraphs), Transformations (the manipulation of paragraphs), and Implications (inferential reactions to paragraphs.) At the intersection of a column with a row will be found a terse explanation of the intellectual processes involved. A case in point would be as follows: at the intersection of convergent production and relations (interrelationships of sentences) we find the following: "evolving main idea as extension of topic sentence." Again, at the intersection of Evaluative and Implications we find the following admonition: "Check author's background as basis for viewpoints; react to author's value judgments; examine author's basic assumptions and inferences from these."

I have stated or implied that the concept *comprehension* seems to defy any attempt at explanation or the act of setting down discrete steps which explain the intellectual processes involved. Many studies or attempts have been made to isolate factors that are related to this complex process.

Seven notable studies, using factorial analysis, are now available. Five of the seven studies identify a "word" factor reflecting an understanding of the denotive meaning of a word. Six of the studies reveal a second verbal factor which probably measures the ability to comprehend the interrelationships among words or ideas. All of the studies disclosed a third factor in ascertaining the meaning intended by the author, namely, the analysis-synthesis of concepts. Therefore, these seven studies provide us with a matrix upon which we may build a structure that perhaps will give us insight into the mental processes we use as we attempt to establish *rapport,* a bond of mutual confidence between reader and author, or listener and speaker.

I wish to propose a *construct* or *model* which, I believe, explains the intellectual processes that are employed as the reader or listener acquires an insight or a Gestalt of the concepts that are portrayed by the language of the writer or speaker.

I. Perception

The child must see clearly the graphic symbols which we refer to as words. These words have no inherent meanings, therefore, perception goes beyond the sensory data. Words are words, things are things, relationships are relationships; words are related to things or to relationships as each reader relates them. Thus the critical element in perception is the meaningful response rather than simple recognition. There is the perception of the word, the phrase, the sentences, the paragraph, and the larger unit of meaning—the story, article, etc. Space does not permit me to explore perceptual veridicality, the effect of emotionally loaded words or the effect of an emotional attitude on the response evoked as a result of the sensory processes.

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[11] George Spache, *Toward Better Reading* (Champaign: Illinois, Garrard Publishing Company, 1962), p. 67.

II. Apperception

Korzybski notes that reading is the reconstruction of events behind the symbols. Apperception refers to the process of relating new material to one's background of experience—it is perception characterized by clearness. The reader is bringing sufficient meaning to the printed page to permit him to obtain from the page only an approximation of the experiences the writer is trying to convey. Thus the writer and reader must have had some commonality of experience. And the degree of veridicality obtained is in direct proportion to the degree of commonality of the experience.

III. Abstraction

This refers to the mental process by which the reader neglects or cuts off certain perceptions, or impressions, or select facts of concepts which are relevant to the purpose of the reading. The process of selecting a specific meaning from a generic meaning may be called abstraction. Through the process of abstraction a reader selects the materials of thinking, and I refer to Russell's[12] list, namely, precepts, concepts, images, and memories.

IV. Appraisal

This refers to the process of estimating the value of, the validity of the aforementioned materials of thinking, according to accepted norms, standards or processes. This is one of the most critical steps in the model. It is also the most complicated. The veridicality of percepts, concepts, images, and memories cannot be overestimated. This process of validation can range all the way from ascertaining if a fact is accurate to the complicated process in forming clear, concise, and well organized concepts. It can also refer to the highest level of thinking—creative thinking in which new syntheses are made.

V. Ideation

From the validated gleanings secured as a result of the above steps—and I reinterject that these gleanings must always be related to the purpose or purposes in reading—a reader then uses them as the materials of reasoning in the following modes of thinking:

1. Inductive (generalizing) reasoning is that mode which proceeds from known data to a generalization, such as a hypothesis that will explain the evidence at hand. A concept is the product of generalizing; a judgment or an opinion may also be the end product of inductive thinking. Laws or principles learned in science courses are generalizations formed by abstracting relevant data from complex masses of data. A prediction is a special form of inductive thinking as well as theorizing, in which a person builds a construct or a model to explain certain phenomena.

2. Deductive reasoning. As a process of reasoning, deduction consists of examining a particular situation or fact in the light of a generalization. A syllogism is an example of this mode of thinking, such as: "Nearly all boys can swim. Francis is a boy. Therefore, Francis probably can swim." A conclusion, a judgment, or an opinion may be the end product of this mode of thinking.

3. Critical thinking or reasoning. This mode of thinking proceeds on the basis of a careful evaluation of premises, facts, etc. and comes to conclusions cautiously through the consideration of all pertinent factors. Critical thinking or reading demands an interaction between the author and reader as well as between speaker and listener. Ascertaining cause and effect relationships makes maximum use of this mode of thinking. Detecting propaganda devices is another example of this high-level comprehension skill.

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[12] David H. Russell, *Children's Thinking* (New York: Ginn and Company), p. 8.

Helping children to improve their critical reading abilities will challenge the best efforts of teachers as the children will need help in evaluating facts from which generalizations are made; in rendering a judgment on the clarity and organization of concepts that are used in building other concepts; in detecting the biases that authors may have; in recognizing propaganda techniques employed by subversive groups; and in recognizing whether the author is capable of making sound and valid judgments. Last and certainly not least, the reader must make a judgment as to whether or not his (reader) background and abilities permit him to make an unbiased judgment about the author's ideas.

4. Problem solving (scientific mode of thinking). This is, perhaps, the most directed of all thinking. It is really an embodiment of the four types listed above. When this type of thinking is manifested by a student, he or she is aware of some problem that must be solved, or a conflict that must be resolved. Five or six steps are usually listed when an attempt is made to describe the processes involved. These steps might be listed as follows:

a. The child's environment has made him *aware of a problem,* or a conflict arises between opposing sets of values. These situations stimulate his mental activity.

b. An *orientation* to the problem takes place. The child may start to think in one direction and then, in another. At the same time he may be gathering evidence to substantiate or refine earlier concepts or conclusions.

c. A tentative solution, or a *hypothesis* is formed as a result of the patterning of the several data. The Gestalt principle of *closure* may be emerging. The child, therefore, gets an insight into a possible solution.

d. An *evaluation* or a testing of the hypothesis then takes place. During this step, the tentative solution or hypothesis is subjected to the most critical examination. As a result, it is either accepted or rejected.

e. The selected solution, or hypothesis is subjected to the *test of use.* This is the stage of verification.

5. Creative thinking. This is thinking at its highest level. Some would say that the ability to draw inferences is one aspect of creative reading. The making of new syntheses or seeing new relationships is another aspect of creative thinking. Still another product of creative thinking is a critical reaction to a treatise on a controversial issue.

VI. Application

If the proof of the pudding is in the eating, in like manner, the effectiveness of a reading program is determined largely by the functional uses readers make of the new ideas acquired. They broaden experiences, increase understandings, and enable one to learn how to engage in many kinds of activities which would otherwise be unknown to him. If students are given aid as they formulate purposes for reading a particular selection, enhancement of the utilitarian uses of reading will occur.

In this paper, an attempt was made to present a construct of comprehension. I am not apologetic about it. It represents, at least, to me, a brief description of the intellectual processes necessary as a reader brings meaning to the printed page thereby establishing rapport with the author. I am sure it has weaknesses—but it must be remembered that I have only shreds of evidence upon which to build the construct.

Every teacher should become as articulate as possible concerning the nature of the reading process. A teacher's concept of the intellectual processes employed as a child comprehends a passage will be reflected in the reading atmosphere she creates for her children. I refer again to the biblical admonition:

> Wisdom is the principal thing; *therefore* get wisdom: and
> with all thy getting get understanding.

The Reading Process and Its Ramifications

RUTH STRANG*

TOO OFTEN, I'm afraid, I talk like the woman whose husband wanted to get a divorce. The judge asked him, "What is the trouble?" "Oh, my wife just talks and talks and talks," he said. "What does she talk about?" asked the judge. "She doesn't say," the husband replied.

Sometimes, too, like the nurse in "Romeo and Juliet," I'm afflicted with total recall. Even after all these years, I have not learned what a French literary critic described as "the art of not saying everything." To include only the most relevant ideas is in line with the newer emphasis on composition which seems to be, not on sentence structure as presented by linguists, but on logic and rhetoric as set forth by Aristotle and Plato. It was the search for structure in the broad field of reading theory and practice that led me to attempt a synthesis of related aspects.

Let us start, as all effective reading instruction should, with the individual.

Marie is fifteen years old and in the ninth grade. She comes from a non-English speaking home. Her verbal IQ on the WISC is 81; her performance IQ, 99; and her total IQ, 88. Her reading achievement is far below her potential mental ability. On three silent reading tests her grade scores varied from 4.7 to 5.3. On the Gray Oral Reading Test, her grade equivalent was 4.0. This is the information about Marie that is available on the cumulative record. It tells us nothing about the processes by which she acquires—or fails to acquire—meaning from the printed page, nor about environmental conditions that may facilitate or inhibit her progress.

To understand how students read, we need a framework, a paradigm, a pattern that encompasses the major or contributory factors. If we focus on the reading process per se, we immediately see that it is a factor of the reader's goals, the degree to which he possesses or has acquired prerequisites for learning, and the effectiveness of the teaching procedures to which he is subjected. This broad, complex view of reading may be discussed under four main headings: product, prerequisites, process, and procedures.

Product

Under product, we have included the main competencies, results, or goals that are to be achieved. These include (a) vocabulary—many words recognized instantly at sight; (b) wo word recognition skills gained through a systematic use of context clues, grapheme-phoneme correspondences, structural analysis, and the dictionary; and; (c) comprehension—ability to derive meaning from words in sentences, paragraphs, chapters, and larger units. These abilities enable the individual to "read the lines."

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*Invitational Addresses 1965, 49-73.

However, the mature reader must do more than get the literal meaning of a passage. He must be able to interpret the author's thought, and to make critical judgments, evaluations, and inferences. This is "reading between the lines." "Reading beyond the lines" involves drawing conclusions, forming generalizations, and applying the ideas gained from reading. The end result of reading is the contribution that it makes to personal development and social welfare.

Of the four categories, the product has been studied most extensively, largely by means of tests. Of the 94 items in Traxler's comprehensive list of reading tests,[1] by far the largest number were silent reading tests of speed, vocabulary, sentence and paragraph comprehension. Next in order of frequency were tests of readiness, measures of study habits and skill, and diagnostic test—ten of each type. There were seven oral reading tests. There was only one test each of "reading capacity," library orientation, listening comprehension, dictionary skills, and logical reasoning. Although additional tests have appeared since Traxler's list was published, there is still a serious lack of instruments to measure the reader's ability to organize ideas while reading, to recognize the author's purpose, and to engage in critical, creative, and interpretive reading.

Several new tests may prove to be valuable supplements to tests of intelligence. In grades three, five, and seven, Braun [2] found a test of concept formation to be more closely related to reading achievement than tests of mental maturity. The Cloze test proved superior to multiple choice tests as a measure of difficulties in comprehension.[3]

More emphasis is being placed upon informal or teacher-made tests, and upon the practice of making continuous appraisal and diagnosis while teaching.

From concern with reading status or product we often move directly to teaching procedures, with the result that we neglect a very important factor—the degree to which the student possesses or has acquired certain prerequisites for success in reading.

Prerequisites

Certain prerequisites underlie both product and process. Holmes [4] called these "sub-strata factors." He studied the relation of variables to high school students' reading speed and comprehension. Employing a technique of factor analysis, he grouped these separate factors into patterns or clusters. Most closely related to reading "power" were four factors: verbal analogies, vocabulary in isolation, vocabulary in context, and auding or listening comprehension—each of which contributed 16 per cent to the power of reading variance.

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[1] Ruth Strang, Constance M. McCullough and Arthur E. Traxler, *The Improvement of Reading*. New York: McGraw-Hill Book Company, 1961, pp. 352-359.

[2] Jean S. Braun, "Relation between Concept Formation Ability and Reading Achievement at Three Developmental Levels," *Child Development*, 34 (September, 1963), pp. 675-682.

[3] John Bormuth, "Cloze as a Measure of Readability," in *Reading as an Intellectual Activity* (J. Allen Figurel, Ed.). New York: Scholastic Magazines, 1963, pp. 131-134.

[4] Jack A. Holmes and Harry Singer, "Theoretical Models and Trends toward More Basic Research in Reading." *Review of Educational Research*, 34 (April, 1964), pp. 131-133.

Other factors exerted lesser degrees of influence. But 25 per cent of the variance remained unaccounted for by all the factors put into the factor-analysis hopper. It is possible that such imponderables as the individual's value-system, his self-concept, his purpose or "set," and other motivations may be among the sub-strata factors that affect his reading process as well as what he reads and why he reads.

Reading difficulties have also been attributed to many other factors. Among these are physical defects, especially visual and auditory; retarded development in visual and auditory perception and discrimination; and neurological dysfunction or minimal brain damage. Lack of previously acquired knowledge and skills and the experience of repeated failure in reading also have a cumulative negative effect on the child's subsequent progress.

Several of these prerequisites deserve more detailed consideration: prereading experiences, specific mental abilities, linguistic factors, listening comprehension, and concepts and values.

Readiness for Reading. Prereading experiences are a prelude to success in beginning reading. From the earliest years, the child's normal curiosity can be fostered, his sense of trust developed, his openness to experiences encouraged. He should come to school eager to learn to read. He should have the ability to understand and speak 2000-3000 words. He should have learned to distinguish small differences in word sounds. Without being specifically taught, he should have learned that meaning depends partly on the order, intonation, and stress with which words are spoken. It should not be necessary to "teach your baby to read." Children who have a rich background of prereading experience tend to catch up quickly with other children of the same ability who have had pre-school reading instruction.

However, many children come to school without having had the prereading experiences just described. These are children from educationally and culturally disadvantaged homes, and from homes where a language other than English is spoken. For them, beginning reading may prove difficult. They may fail in their first attempts to learn to read. This initial failure undermines their self-confidence. They become afraid to try. Their parents may respond by acting disappointed or punishing them. Their teachers may express disapproval. Their classmates may ridicule them. Any of these responses may intensify their concept of themselves as children who can't learn to read.

Pilot studies in New York City, at Peabody College, and in other centers have demonstrated the value of preschool or kindergarten prereading experiences. Programs under "Project: Head Start" are now underway in many communities.

Readiness is a prerequisite for any child who is about to take the next step in the sequential development of his reading ability.

Mental Abilities. Although individual intelligence tests are given less weight than formerly, they are still important diagnostic instruments. Analysis of subtest scores and patterns widens their usefulness and enhances their diagnostic value. The individual's total score or IQ often conceals wide differences in his mental abilities. A retarded reader may be weak on certain subtests, and strong on others. One of my doctoral students, Eldon Ekwald, is studying the relationship between the WISC subtests and certain reading abilities.

Retarded readers generally, though not always, score higher on the performance section than on the verbal section of the Wechsler Intelligence Scale for Children (WISC) and the Wechsler Adult Intelligence Scale (WAIS). This discrepancy may be due to an inherent lack of verbal ability; to environmental, emotional, or other factors that are inhibiting the functioning of verbal ability; or to other circumstances that have prevented the individual from learning to read. To be significant, however, the difference between the verbal and the performance scores should be fairly large because the performance IQ has a general tendency to run higher than the verbal.

Of still more diagnostic value are the profiles of sub-test scores. These show graphically the patterns of strength and weakness in the individual's mental functioning. Each represents some mental process involved in reading that *may* be improved by practice and instruction.

Studies of the relationship between reading ability and scores on the sub-tests of the Wechsler have shown a characteristic pattern for retarded readers. They tend to score low on the sub-tests of Information and Arithmetic, and also relatively low on Digit Span and Coding. On Picture Arrangement, Block Design, Picture Completion, and Object Assembly, retarded readers often score relatively high. Conflicting results were reported on the Vocabulary sub-test.

Each sub-test might well be examined for its significance to the teaching of reading. A low score on the Information test might indicate lack of mental ability to gain information as normal children do. Or it might reflect lack of reading ability—the means by which older children in our culture gain much of their information. Both the Information and the Arithmetic sub-tests are closely related to school learning.

Since the Coding sub-test involves visual discrimination and memory abilities that are also required in decoding printed words, we should expect retarded readers to score low.

The Digit Span sub-test requires a mental ability somewhat similar to that involved in getting the meaning of a sequence of words arranged in a sentence. A low score on this sub-test may indicate that the individual has a short attention span, difficulty in concentration, or the habit of thinking slowly and reacting slowly to any stimulus that involves visual motor skills.

The two sub-tests on which retarded readers generally score relatively high—Block Design and Picture Completion—measure the subject's response to stimuli that are always at hand. These tasks are less abstract than those set by other subtests in the WISC. Poor readers, as a group, tend to approach a learning situation in a more concrete manner than do good readers; they are less able to handle abstractions.

Analysis of any test of mental maturity indicates strengths and weaknesses in areas that are often associated with reading disability. Strengths can be developed; weaknesses remedied. To improve visual-motor ability, the Frostig and the Kephart programs are useful. To increase visual and auditory discrimination, teachers give children practice in recognizing details in pictures, and in distinguishing similar forms, letters, and words. Older pupils may be helped to develop the mental abilities that are prerequisite to mature reading by using the Thurstone exercises published by Science Research Associates.

Since reading tasks that resemble other school instruction are often associated with negative attitudes toward the teacher, toward school, and toward reading, we try to make remedial work as different from regular school instruction as possible. We use concrete, multi-sensory approaches. For example, we use word, phrase, and sentence cards to build sentences and paragraphs. Since retarded readers are weak in information, we build up their reservoir of meanings through avenues that require no reading—pictures, trips, discussions and listening to stories and articles read aloud.

Thus examination of the mental processes of our readers enables us to find appropriate methods and materials to build the prerequisites for success in reading. Bearing in mind the characteristic patterns of retarded readers, we can study individual profiles to observe deviations that may have special significance.

Linguistic Factors. Linguists put primary emphasis on the spoken language. They call attention to the meanings conveyed in speech by pauses, by differences in pitch and stress, and by intonation and rhythm. Although listening and speaking come first in a child's language development, are prerequisite to reading, and even though there is scientific evidence that vocal cords move very slightly even in rapid reading, we would question the statement made by some linguists that the reader must first reconstruct the spoken sound of a printed sentence before he can comprehend its meaning.[5] This would seem to be a slow, laborious process that would be incompatible with rapid reading. Is it not possible for the mature reader to make a direct association between the printed words and the author's meaning? It would seem that rapid readers achieve speed through clue reduction, and that their reading vocabulary exceeds their speaking vocabulary.

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[5] John B. Carroll, "The Analysis of Reading Instruction: Perspectives from Psychology and Linguistics," in *Theories of Learning and Instruction.* The Sixty-third Yearbook of the National Society for the Study of Education, Part I. Chicago: University of Chicago Press, 1964, p. 338.

A related factor that linguists emphasize as a prerequisite to reading for meaning is an understanding of sentence structure, i.e. syntactic construction—the meaning conveyed by various arrangements of words in English sentences. It is their contention that knowledge of these grammatical meanings combines with vocabulary knowledge to unlock the full linguistic meaning of a selection. Children should learn to think of sentences as constructions within constructions, rather than as strings of separate words. Comprehension in reading does depend upon one's capacity to use the English language, as well as upon one's familiarity with the vocabulary of the area of knowledge with which the passage is concerned.

Listening Comprehension. The third cluster of factors that Holmes and Singer found to be significantly related to reading speed and power may be designated as ability to comprehend the meaning of a passage when it is read aloud. Listening with understanding carries over into reading for meaning. Tests of listening comprehension are useful in appraising reading potential, and training in listening has been found to contribute to reading improvement.

Value Systems, Motivation, and Self-concept. These three are interrelated. The desire to read is a resultant of present need, the push of the past, and the pull of the future.

For the little child, desire for approval by teachers and parents is a strong motivation. Intrinsic interest in the content is a more permanent life-time motivation. A specific need to fill out an application blank for a part-time job, to get a driver's license, or to pass the Army classification tests, often spurs a previously indifferent teenager "to get down to work on this reading business." When asked why he wanted to read better, one slow learner gave these reasons: "So no one will laugh at me, so as not to be stupid, so no one will cheat me." In his study of the nature of mature reading, William S. Gray[6] came to the conclusion that the mature reader "has acquired many compelling motives for reading and focuses his attention on the meaning of what he reads."

The most persistent and pervasive influences are the individual's self-concept and self-ideal. The self-concept may be predictive of, a cause of, or a result of reading achievement. In a primary group, the children's self-concepts were, in general, more predictive of their reading achievement than were their scores on the Detroit Beginning First Grade Intelligence Test, which was given near the end of Kindergarten.[7] On all age levels, evidence is accumulating about the relation between an individual's self-concept and his achievement in reading.

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[6] William S. Gray, "The Nature of Mature Reading," *The School Review*, LXII (October, 1954), p. 394.

[7] William W. Wattenberg and Clare Clifford, "Relationship of the Self-concept to Beginning Achievement in Reading," *Child Development*, 35 (June, 1964), pp. 461-467.

The Reading Process

What do we really know about the chemistry, physiology, and psychology of the reading process? What kinds of thinking go on in a student's mind when he reads a short story, a popular article, a textbook in science or history? How does he distinguish the main ideas and the supporting details? What associations does he make between what he reads and what he already knows? What kind of questions does he ask? What reasoning takes place? Does he comprehend better when reading aloud or silently? By what process does a child learn to read, and by what process does he continue throughout life to get meaning from the printed page? These important questions have been too long neglected. Satisfactory answers to them would help us determine what teaching methods to use. "The teaching process must take its clue from the learning process." If we can determine the learning process that the child uses, then we can try to create conditions that capitalize on that process.

The reading process may be explored on several levels—chemical, neurological, psychological, and behavioral.

The Chemical Level. Attempts are being made to assess the influence of body chemistry on the functioning of the nervous system, with special reference to reading. It seems possible that the child's nutrition and the stresses and strains that affect the chemistry of his body may modify synaptic transmission, which may govern the speed with which he reads.[8] However, Staiger [9] obtained no evidence that the administration of a single drug, deanol, improves the performance of retarded readers.

Neurological Processes. Much more extensive work has been done on neurological impairment with reference to severe reading disability. Rabinovitz has recognized two levels of neurological disorganization—the minimal type that is difficult to diagnose, and the more easily recognized brain injury. Rabinovitz, de Hirsch, and others emphasize the importance of detecting neurological impairment at an early age; this will help to prevent the secondary emotional disturbance that often results from expecting the child to accomplish learning tasks that are too difficult for him.

The Psychological Process. This includes all that goes on from intake—the stimulus of the printed word—to output—the individual's response in thought, spoken or written words, or action. Output may take many forms: a mental image evoked by the passage, an answer to a question, a written summary, an illustration or drawing of a character or scene, a motor response to a direction.

The first stage is what Samuel Kirk has called *visual reception,* a process necessary to produce a clear visual impression. When the sensory impressions, visual and auditory, pass to the cerebral cortex, they combine with traces already imprinted on the nervous system to produce meaning. The words have now been perceived.

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[8] Donald E. P. Smith and Patricia M. Carrigan, *The Nature of Reading Disability,* New York: Harcourt Brace, and Co., 1959.

[9] Ralph C. Staiger, "Medicine for Reading Improvement," *Journal of Developmental Reading,* 4 (Autumn, 1960), pp. 12-16.

Perception is a learned process; it is not simple. It is affected by the attention, the previous experiences, the needs, and the expectancy of the individual. Important individual differences in perceptual style have been summarized by Helen Robinson.[10] Three types of perceivers may be distinguished: (1) those who see the word as a whole—those are the more able learners and better readers; (2) those who perceive word parts and tend to be preoccupied with unimportant details—these tend to be poor readers; and (3) those who focus on the sequence of letters in the word as a whole. Tachistoscopic studies have shown that familiar syllables and words can be recognized almost as quickly as individual letters, and short passages almost as readily as single words. As children mature, they perceive longer and more complex spelling patterns as units.

Conceptualization is the process by which the individual puts a single perception in a more inclusive setting. He relates the observed phenomenon to a class of objects or events. A new word is an "empty category" which can be invested with more and more meaning as new experiences enter the mind. This is the beginning of abstract thinking, and the basis for generalization.

There is a reciprocal relation between perception and conceptualization. Concepts screen or filter impressions as they come into the mind. Thus the individual avoids dealing with a bewildering diversity of separate impressions. Traits extracted from perceptions are synthesized into concepts; concepts aid in the interpretation and organization of perceptions.

There is a positive relation between conceptual ability and reading proficiency. Children who fail in reading in the upper primary grades are often deficient in the ability to form concepts.

Research has clarified the first stages of the reading process—sensory impression, perception, conceptualization. What happens next is still a psychological "no-man's land." It has been explored primarily by speculation and by experiments in animal psychology.

It has been hypothesized that at *the higher level of association* there are patterns, schema, or circuits—memory sub-systems that are interrelated. These become larger and better organized when they are activated simultaneously. Thus the "whole perceiver" has an advantage over the "part perceiver." The individual's reading ability increases as the interfacilitation of the working systems improves. The word-by-word reader makes each association in isolation, rather than activating numerous connections within and among his memory patterns. The way a thing is learned helps to determine how it is used or applied.

Behavioral Level. This refers to

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[10] Helen M. Robinson, "Perceptual and Conceptual Style Related to Reading," in *Improvement of Reading Through Classroom Practices* (J. Allen Figurel, Ed.). Newark, Delaware: The International Reading Association, 1964, pp. 26-28.

the way individuals actually read. Do the gifted use different processes than the less able? Can the less able learn the more efficient methods, or are the methods they have evolved the best for them? These are fascinating questions to which we have no answers. Fortunately there are many ways in which we can gain insight into students' reading processes. These will be briefly described.

1. Observe the individual's eye movements. Since Buswell's[11] pioneer work on eye movements, more than one hundred similar studies have been reported. These studies explain how the eyes function during reading. We have learned that the span of recognition increases during the school years, but that even adults do not usually recognize more than two words per fixation. Eye movements may provide objective evidence that a reader is having difficulty, but introspection is necessary to show what the difficulty is. The eye movement camera does not show how the mind works. Consequently the informal "peephole method" of observing the reader's eye movements through a tiny hole in the center of the page he is reading is more useful in studying the reading process. When he oscillates on a certain word or makes a regressive movement, the observer can stop him and ask what was going on in his mind at that point.

2. Observe how students respond to reading situations during the school day. During silent reading periods, the teacher may note the way the student approaches the reading assignment, and may chart his periods of attention and distraction. From the student's own questions and from his answers to questions that call for facts, generalizations, or interpretations, the teacher may draw inferences about his reading process. To verify these, the teacher will make further inquiries: "How did you happen to know this unfamiliar word?" "Why did you choose this answer rather than another?"

You will be amazed to see in what devious ways children acquire their vocabulary.

3. Ask the student to read a short selection aloud. As well as obtaining the usual diagnostic information afforded by oral reading, the teacher may also make inferences based on the student's facial expression, bodily movements, side remarks, and answers to questions involving comprehension.

For example, Marie, the ninth-grader whom we briefly described earlier, showed embarrassment when asked to read the paragraphs on the Gray Oral Reading Test. She made many errors in pronunciation, a few repetitions and substitutions, and two omissions. The repetitions seemed to stem from her struggle with the pronunciation of the words. On the easier paragraphs, her substitutions made sense. On the comprehensive questions, her difficulties became serious at the fifth paragraph when there was a marked increase in the number of key words that she did not know. The examiner could have learned more about her reading process by asking her to "tell what happened" when she pronounced a difficult word correctly, or made a given kind of error. This could have been done very easily while she was being examined in the individual testing situation, or immediately after the test had been administered according to standardized instructions.

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[11] Guy T. Buswell, "The Process of Reading," *The Reading Teacher*, 13 (December, 1959), pp. 108-114.

4. Analyze the student's responses on standardized silent reading tests. Most of the diagnostic value of tests is lost when we neglect to study individual responses. This kind of study gave E. L. Thorndike [12] his famous insight into the reading process.

On the multiple choice questions of the vocabulary section of the Metropolitan Intermediate Reading Test, Marie made many errors. She associated "glorious" with "independent" rather than "splendid." Perhaps to her, being independent was a glorious feeling. She marked "future" as the correct meaning of "ancient" instead of "old." Here she may have been misled by a vague conception of both words as associated with time. In marking "cause" instead of "results as the meaning of "effect" she apparently reversed the meanings of two words commonly used together.

These are only tentative inferences that could be made from the analysis of a student's responses on a multiple choice vocabulary test. To understand her actual thought processes, it would be necessary to ask her to try to explain how she arrived at the answers that she marked.

On the word discrimination part of the same test, we obtained further understanding of Marie's reading process. In the sentence "Be sure to _______ your raincoat" she selected "were" instead of "wear." Similarly, in many of the other items, she inserted a word that begins with the same letter as the correct word. Moreover, she showed little awareness of structural or grammatical clues to meaning; she chose "terminate" instead of "terminal" in the sentence, "The truck driver delivered the trunk to the railroad _______." From this section of the test, it was possible to infer that Marie tended to use initial consonants as her sole method of word attack, to be unconcerned about whether the word she chose made sense in the sentence, and to neglect grammatical clues to meaning.

In the paragraph reading section of the test, Marie seemed sometimes to show a similar disregard for appropriateness in her answers. Some of her choices were reasonable. She said "Some of the boats were probably not very *well made*," instead of *big*, which was considered the best answer. In another paragraph she supplied an idea of her own—"be in a parade," instead of the correct response, "greet visitors." In still another item, she gave overpotency to the word "bicycle" and made up her own conclusion instead of giving one that could be properly derived from the paragraph as a whole.

From the analysis of Marie's responses on this standardized test, we could make several tentative inferences about her reading behavior. She seemed to be misled by irrelvant or partial word associations. Apparently her only method of word attack was recognition of the initial letter. In reading a paragraph, she grasped at any straw that might enable her to make a response. It seemed as though her main concern was to mark some answer, whether correct or not.

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[12] E. L. Thorndike, "Reading as Reasoning: A Study of Mistakes in Paragraph Reading," *Journal of Educational Psychology*, 8 (June, 1917), pp. 323-332.

5. Analyze the student's answer to the unstructured or creative-type question on an informal reading test. The question, "What did the author say?" may lead a student to reveal a great deal about his reading process. In studying responses to this type of question we find many different reading styles or approaches:

> Some students select a few isolated, unimportant, or irrelevant details.
> Some select the main ideas.
> Some select the main ideas, and cite supporting details.
> Some compose a brief, terse summary.
> Some offer a vague, general summary.
> Some tend to be carried away by their emotional response to the passage.
> Some tend to elaborate on details that are purely personal in significance or interest.
> Some use a passage as a springboard for creative thinking.
> Some make a well-organized summary of the author's pattern of thought.
> Some compose a full and accurate summary, and supplement it with their own reflection, and critical evaluations.

You will find examples of all of these reading styles in any heterogeneous class.

Although the unstructured question does not systematically measure the reader's comprehension of simple and definite facts, it may have the more important value of yielding insights into the student's thought processes; it may give a glimpse, as Paul Diederick admitted, into how the reader's mind works.

6. After students have read and completed the comprehensive questions on an informal group reading test or inventory, ask them several questions about the reading method that they used. Although many students, especially the less able readers, find it difficult or impossible to identify and describe their reading methods, others make revealing comments—such as the following, made by a boy in the eleventh grade:

> Question: What did you do to get the main idea?
> "I thought about the main idea as I went along."
> Q.: What did you do to get important details?
> "I tried to correlate them with something I already knew."
> Q.: What did you do when you met a word you did not know?
> "I got the idea from the context. If it's a particularly puzzling one, I try to think up a Latin derivative."
> Q.: Do you like to read books of this kind? (a social studies text)
> "No. I like to read plays and biographies. I got a big blast out of Van Loon's books. But, in general, I'm bored stiff by this type of stuff."

7. Ask them point blank: "How do you read a given assignment?" Many years ago I asked all the graduate students at Teachers College who had made straight *A* records to describe their methods of getting the author's thought. It became evident that these successful students used a variety of methods, some of which represented wide departures from those commonly recommended. The following is one student's description:

> I find my method of gaining ideas from reading is comparable to building a skyscraper. I first read the material through completely and quickly. On the way, I get a general outline or skeleton of the material. After this reading, I go back and start over more slowly. This time I argue my way through the book and fill in the skeleton which I built the first time. This seems to be my method for reading material which is rather difficult."[13]

Each reader appeared to have certain idiosyncratic methods that were helpful to him.

A similar procedure was used by Michaels[14] to ascertain what methods high school students used in reading four subjects—English, chemistry, plane geometry, the United States history. They were asked to describe their usual method of reading different kinds of assignments in each subject. Two representative responses will give us some idea of their study processes:

> First, I look at the question I am to answer. Then I will look up the subject in the index of a book and turn to the page that has the information on the question. I then read the information available in that book. I usually follow the same procedure with three to five other books. When I have finished these books, I take the most important information from each and begin to compose my answers to the questions.
>
> I always read my text first. Next, I select several books on the subject, noting their differences in details and general feeling about the subject. I then write what I feel are the essential ideas that I would be likely to forget, and the major differences in the references in which I found "my" point of view.

8. Use an unstructured interview to gain understanding of how students have read certain selections and answered questions on them. In a study of interpretation of poetry, Letton[15] established the value of retrospective verbalization in identifying the reading processes. She recorded the subjects' oral interpretive responses in a systematic way, and identified differences in the introspective and retrospective verbalizations of high-level readers and low-level readers.

Using a similar technique, Rogers[16] studied the responses of three classes of eleventh grade students—high, average, and low—to a selected short story. She began with a completely unstructured approach—"Try to tell me everything you thought and everything you felt as you read this study. Just go ahead and talk about the story." This approach elicited a wide range of responses,[17] such as the following:

Response on a symbolic level:

> I thought as the story went along the symbolism of the snake became more clear and kind of stood for—evil, perhaps. . . . But it also symbolizes something deeper. . . . I think it stands for all bad. The snake is black, and black always stands for bad. . . . The mate symbolizes something which all of us would want to find. . . .

Response on a literal level:

> In a way, I thought it was bad, you know, for the dog to kill the snake, but in a way he was doing what the boy's father told him to do. . . .

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[13] Ruth Strang, Constance McCullough, and Arthur Traxler, *The Improvement of Reading*. New York: McGraw-Hill Book Company, 1961, p. 20.

[14] Melvin L. Michaels, "A Study of Similarities and Differences in Student Perceived Reading Difficulties in Selected Secondary School Subjects." Unpublished doctoral project, Teachers College, Columbia University, New York, 1963.

[15] Mildred Letton, "Individual Differences in Interpretive Responses to Reading Poetry at the Ninth Grade Level." Unpublished doctoral dissertation, The University of Chicago, 1958.

[16] Charlotte Dee Rogers, "Individual Differences in Interpretive Responses to Reading the Short Story at the Eleventh Grade Level." Unpublished doctoral dissertation, University of Arizona, 1965, p. 40.

[17] *Ibid.*, p. 113.

After the students had responded to this invitation to talk freely, Rogers[18] asked a number of specific questions such as these:

> What are the main events in this story?
> How did you discover these main events?
> What is the main point in this story?
> How did you arrive at this conclusion?
> How do you know what kind of a person he is?

In addition, Rogers used a questionnaire to obtain information about the students' attitudes toward short stories, and their habits of short story reading.

A variation of this technique, combined with several others, was employed by Cafone[19] with an extremely uncommunicative group of ninth grade students who were five or more years retarded in reading, who had a history of school failure, and who scored below average on the verbal section of the WISC or the WAIS. Although silence or "I don't know" were their most common responses to the invitation to tell how they arrived at an understanding of the selections, some of them, including Marie, occasionally brightened these interviews with significant insights.

Marie's attention to context clues seemed to improve as her interest in the story increased. However, she tended to remember the main ideas that were personally significant to her, rather than to distinguish the main ideas logically from the many supporting details. This approach sometimes led her to make errors in interpretation. For example, she said that one main idea of the story was that the boy "should not drop out of school." This was not a main idea; in fact, the author implied that he might as well drop out of a school that had no meaning or utility for him. Her extremely personal approach also led her to insert ideas that were not in the story at all. For example, she said that the reason for the boy's losing his job was his inability to speak well. This was one of Marie's own problems, but it was not mentioned in the story.

The technique of retrospective-introspective verbalization may be modified in various ways. Starting with an unstructured approach, the interviewer may allow the subject free expression of his reflections, thoughts and feelings about the selection, and then ask questions designed to promote clarification and elaboration, somewhat like those used by Piaget in his study of children's language and thoughts. This procedure is also comparable to the "Inquiry" technique of the Rorschach test. The interviewer follows up the subject's comments with such questions as these:

> How did you know that?
> Why didn't you say ___________?
> How did you know it wasn't ______ ___________?
> Did you know this before?
> Were you especially interested in this (the right answer)? Why was it interesting to you?

The final step, as in the Rorschach, might be a "testing the limits" by asking the subject to respond to a series of "yes" or "no" questions such as: Did you think about the title before beginning to read? Did you skim the selection before reading it carefully?

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[18] *Ibid.*, p. 40.

[19] Harold C. Cafone, "Individual Differences in the Reading Process of Ninth Grade Retarded Readers." Doctoral project in progress, University of Arizona, 1965.

To delve more deeply into the process that a student actually uses, the interviewer may ask him to introspect while he is reading. By use of this introspective method, in combination with other techniques, doctoral students at the University of Chicago have conducted several very significant researches. Swain[20] asked twenty-nine college students to think aloud as they read passages of literature, social science, and science, and then to answer questions on them. She recorded their verbalizations about how they analyzed the words and restructured the meaning. This approach encouraged the subjects to reveal their conscious thought processes.

Pickarz[21] used a similar procedure with able sixth grade students. She asked the subjects to verbalize freely their thoughts and feelings about the selection as they read it.

Using introspection as supplementary to a more objective approach to ascertaining students' specific purposes in reading certain kinds of material, Smith[22] learned much about their reading processes. For example, she found that some students persisted in reading for the main ideas even when the instructions were to read for details.

In 1956 at the University of California, Berkeley, James R. Squire studied "The Responses of Adolescents to Literature Involving Selected Experiences in Personal Development." His study is now published in pamphlet form. In interviews lasting several hours, Squire[23] obtained responses of ninth and tenth grade students to each segment of four short stories. They were asked to respond freely and completely in describing the "feelings, ideas, opinions, or reactions" which occurred to them while reading or at the end of the story. The transcripts were analyzed according to seven categories: literacy, judgment, interpretational responses, narrational reactions, associational responses, self-involvement, prescriptive judgments and miscellaneous. Wilson[24] used a similar analysis in comparing the responses of college students to three novels before and after class discussion of the novels.

Introspective methods in a case-study setting were employed by Strang[25] in an exploration of reading patterns, and by Gray and Rogers[26] in a study of different kinds and degrees of maturity in reading.

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[20] Emeliza Swain, "Conscious Thought Processes Used in the Interpretation of Reading Materials." Unpublished doctoral dissertation, University of Chicago, 1953.

[21] Josephine Pickarz, "Getting Meaning from Reading." *Elementary School Journal*, 56 (March 1956), pp. 303-309.

[22] Helen K. Smith, "The Responses of Good and Poor Readers When Asked to Read for Different Purposes." Unpublished doctoral dissertation, University of Chicago, 1964.

[23] James R. Squire, *The Responses of Adolescents While Reading Four Short Stories.* Research Report No. 2. Champaign, Illinois: National Council of Teachers of English, 1964.

[24] James R. Wilson, "Responses of College Freshmen to Three Novels." Unpublished doctoral dissertation, University of California, Berkeley, 1962.

[25] Ruth Strang, *Exploration of Reading Patterns.* Chicago: University of Chicago Press, 1942.

[26] William S. Gray and Bernice Rogers, *Maturity in Reading.* Chicago: University of Chicago Press, 1956.

Jenkinson[27] used a "cloze test," in which words were omitted within the reading passage at regular intervals. The reader was asked to supply the precise word that the author intended. After taking the test, each student was asked in an interview to explain the reasons for his insertions as he again completed the cloze passages. The students who were able to supply the largest number of correct words also tended to be the students who saw more relationships among the various ideas, had a better understanding of the language structure, and made better use of the grammatical and syntactical clues to meaning. They were, in general, less subjective than those who scored low.

Much can be learned about the reading process through students' retrospective and introspective verbalization. Various methods of studying the reading process have yielded a number of insights:

Able readers differ from those who are less able in many respects:

> In their ability to analyze language and reconstruct the meaning of a passage.
>
> In their ways of integrating newly acquired ideas with previous experience.
>
> In the intensity of their responses to what they read, and in their application of new insights to their own lives.
>
> In their grasp of symbolic meanings: The more able readers respond about equally to literal meaning, implied meaning, and opportunities to offer critical evaluations; whereas the less able readers respond almost exclusively to literal meaning. The more able also tend to be more objective and impersonal in their interpretations. The less able are more likely to confuse their own ideas with those of the author.
>
> In the positiveness of their attitudes toward literature.
>
> In their background knowledge of poets and poetry.
>
> In the degree of satisfaction they have derived from their previous experiences in reading literature.

It should be emphasized that individual differences as well as group differences are to be found among able readers and less able readers.

Since the reading process demands an ever active intelligence, it changes according to the nature and difficulty of the reading material. The reader "must select, repress, soften, emphasize, correlate, and organize, all under the influence of the right mental set or purpose or demand."[28]

Adult readers are highly influenced by their interests and attitudes, which affect their interpretation of the author's ideas.

Reading achievement—the product—depends upon the prerequisites that the individual possesses for a given reading task, the processes he uses, and the skill of the teacher.

Procedures

What are the optimal procedures for teaching reading to children at a given chronological or mental age? To answer this we must have an understanding of the product—of what the learner can do when he has realized the objectives; we must know what prerequisites he brings to the learning situation; and we must know what processes he uses. I have often described the teaching process by using this formula:

The focus is on *O*—the individual

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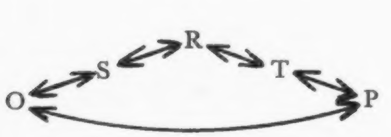
[27] Marion Dixon Jenkinson, "Selected Processes and Difficulties of Reading Comprehension." Unpublished doctoral dissertation, Department of Education, University of Chicago, 1957.

[28] Thorndike, *op. cit.*



student. His physical condition, his need and desire to read, his mental ability, his previously learned skills and previously acquired knowledge, his concept of himself—any or all of the underlying factors already mentioned may make him more or less responsive to the teacher's instruction.

Starting with an understanding of the student, the teacher is next concerned with the situation—*S*. This is the classroom situation over which the teacher has most control—attractive physical conditions, and atmosphere conducive to learning, and reading material of suitable format, difficulty, and appeal.

The student responses—*R*—are to the situation. Each experience leaves a trace—*T*—on his nervous system; this affects his general perception—*P*—of the next situation in which reading is involved.

This, I sometimes tell students, is the psychology of teaching reading in a nutshell, to which one sprightly student responded: "The psychology of teaching reading is too complex to put in a nutshell, even a coconut shell!"

Concluding Statement

I have outlined the main stages in the reading process, as I understand it, from intake—the stimuli of a printed page or passage—to output in the form of vocal or motor responses.

The first sequential stages have been quite clearly defined: auditory reception, visual reception, perception, and conceptualization. The higher association processes involved in the reading process are beginning to be explored through observation, analysis of errors, the reader's responses to unstructured questions, and introspective and retrospective reports.

I have become more aware of the necessity for a case study approach to an understanding of the reading process by my recent work with ninth grade severely retarded readers, who have experienced years of failure and frustration in learning to read. Marie, to whom I have previously referred, is one of this group. The variation in their responses in different reading situations is astonishing. One boy whose score initially on the Gray Oral Reading Test on first grade level was, after twelve hours of individual instruction, able to pass the official driver's license examination with a score of 96. In the first individual session, the worker, Mrs. E. Louise Knopf, asked him whether he would prefer to learn word attack skills in connection with a story he wanted to read, or begin with systematic instruction in reading and go ahead as fast as and as far as he could. He chose the first of the alternatives. This approach was not successful. The book he had chosen was written on third to fourth grade level of difficulty, and it was not as interesting as he had anticipated. He stumbled over almost every word.

In the course of conversation with the worker, he mentioned his desire to get a driver's license. As a first step he collected and learned a large number of road signs. Then he tackled the driver's manual. The worker read him a section at a time: they discussed it; they formulated questions that might be asked on the examination; he faced and mastered difficult key words like *vehicle* that might be included in the test. Then he would give orally his answer to each question. When he was satisfied that the answer was complete and correct, he dictated it to the worker. She wrote it and typed it for him to read the next period. In this way he made his own driver's manual which he could read and reread fluently and with full comprehension.

Another boy initially scored below fifth grade level on standardized silent reading tests and still lower on the Gray Oral Reading Test. In a series of individual conferences he read and comprehended far more difficult material. He read aloud with few errors paragraphs from Mark Twain, Lincoln's Gettysburg address, a selection from a biology high school text, and articles in *Hot Rod* magazine. Under the stimulus of a friendly tutor, he began to read the newspaper —as much as he could understand of the sports page, the comics, and the front page news.

We can only speculate concerning this discrepancy between test results and performance under the most favorable conditions. Here are some possible explanations:

> Interest in the content of the more difficult material generated his maximum of effort.
>
> Content that had little or no meaning, use, or interest to him, was rejected and consequently evoked no effort.
>
> Content that was immature and read by younger children decreased his self-esteem and aroused his resistance to reading.
>
> Previous instruction in phonics, syllabication, and other word recognition skills may have lain dormant until he had a real need or sufficient motivation to apply them.
>
> Although his concept of himself had been lowered by being called "dumb" and "stupid" and by repeated experiences of failure, he still may have retained a deep-seated desire to make himself as "good" and complete as possible. When the opportunity to develop his potentialities was offered and the boy experienced some success, he was stimulated and challenged to do his best.
>
> The negative influence of his classmates was not operating in the individual learning situation.
>
> The relationship with the worker—a relationship of friendly, sincere, positive regard and an expectation that he could and would improve his reading, supported him in his efforts to use the abilities he did possess in getting the meaning of selections of real interest to him.

Experiences like these have convinced me that what I have called product or goals, prerequisites, process, and teaching procedures are all interwoven. To understand an individual's reading development, we need to be aware of all of these interacting aspects.

Problems and Research Considerations in Reading Comprehension

JAMES F. KERFOOT*

READING comprehension has long been regarded as one of the most important areas in reading instruction. Unhappily, the complexity of reading comprehension has generated much confusion. Definitions have been largely inconsistent and instructional programs have been organized chiefly by intuition.

There are many classifications of comprehension skills. They are at once useful and confounding. Classifications have been useful in providing teachers with a sense of direction in developing comprehension ability. But classifications proliferate. Teachers who do not confine their study to a single reading textbook are soon overwhelmed by the accumulation of overlapping terminology. This paper addresses itself to the problem of confusion in comprehension and discusses the following five topics: (1) What are the areas of confusion? (2) What are the critical problems in reading comprehension? (3) What are the sources of confusion? (4) What recommendations are indicated? (5) What specific research should be investigated?

Areas of Confusion

Difficulties in reading textbooks. One major area of difficulty encountered by the student of reading comprehension involves the reasonable but highly individual use of terminology by the authors of reading textbooks. The major comprehension types developed by one author become the minor types of another, and terms descriptive of one type of comprehension skill may stand for an entirely different type of ability in two independent classifications. Since we are never totally pleased with the classifications which precede our own, reading theorists have been led to personalize comprehension with their own unique labels.

The result of this practice has been the evolution of a vocabulary that is characterized by the "synonym" and in some cases by contradiction. Acceptance of the "synonym" by the student is basic to an understanding of reading comprehension. Rejection of the "synonym" is the fact of reading comprehension for the author. Perspectives in comprehension are varied, but three types of classification are commonly used.

Reading comprehension has been frequently classified by units of material. Uniqueness is attributed to the reading behaviors involved in comprehension of words, phrases, sentences, paragraphs, and total selections. These behaviors are thought by some to represent "general reading comprehension ability." Terminology is fairly consistent within this classification scheme.

A second type of classification involves rate or the care which is devoted to a comprehension task. The

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following examples illustrate this type of comprehension and some of the vocabulary difficulties.

Yoakam (*10*) lists: careful reading, normal reading, rapid reading, and skimming.

Berg, Taylor, and Frackenpohl (*1*) list: careful reading, usual reading, accelerated reading, and selective reading. They break down selective reading to include skimming and scanning. Skimming for Yoakam includes scanning.

Spache and Berg (*7*) consider skimming and scanning as types of rapid reading, while Berg, Taylor, and Frackenpohl are careful to distinguish skimming and scanning from accelerated reading which is the equivalent of Yoakam's rapid reading. Rate classifications by other theorists add to the confusions which are evident here.

A still more confusing third classification is concerned with reading for various purposes and involves what Bond (*2*) calls "the specific comprehension abilities." Since reading purposes may be so varied, this type of classification is often elaborate, and the commonalities among classifications often obscured. The following examples taken from classifications by outstanding members of the reading profession should illustrate the point.

Reading to predict outcomes is: a subheading of Bond's (*2*) "Reading to Interpret," part of Durrell's (*3*) "Elaborative Thinking," and a subheading of Russell's (*6*) "Creative Reading."

Making inferences is: for Bond "interpretive reading," for Durrell "elaborative thinking," and for Russell "creative reading."

Differentiating fact from opinion is: for Bond "reading to evaluate," for Durrell "critical reading," and for Russell a type of "creative reading." Comprehension has also been classified by: life uses, the process involved, the content being read, and a variety of involvements with the more mechanical study skills.

Difficulties in reading tests. A second major area of difficulty involves the differences in tests of reading comprehension which purport to measure a particular ability. Perhaps the greatest point of weakness is the test which measures "general comprehension ability." What is "general comprehension ability?" Let us consider the measurement of this ability as approached by three different instruments.

The Durrell-Sullivan Reading Capacity and Achievement Tests, Primary Form, measure the comprehension of each of several paragraphs by the use of five multiple-choice questions.

The Stanford Achievement Tests, Primary II Battery, measure the comprehension of each of several paragraphs using a contextual approach. Words or phrases are to be selected to fill in blank spaces.

The Gates Advanced Primary Reading Test, Paragraph Reading, measures the comprehension of paragraphs by asking the child to follow directions given in each paragraph.

All three of these instruments measure "reading comprehension."

Investigators using any of these instruments may report the effect of an experimental treatment on "reading comprehension." Are we sure that they are all measuring the same ability? When two investigators report conflicting results regarding growth in reading comprehension, perhaps we should take a close look at the instruments.

In the area of specific comprehension tests, the problems are similar but more complex since terminology is again confounding, and skills treated separately by one test maker may be combined by another. Tests of specific comprehension abilities such as the Gates Basic Reading Tests or the Developmental Reading Tests reflect the importance attributed to the separate testing and teaching of specific comprehension abilities. If a specific comprehension ability such as reading to follow directions is distinct from general comprehension ability, what is being measured by a test of general comprehension ability to which the child responds by following directions?

Such questions not only illustrate the problem but suggest some possible directions for thorough re-examination.

Difficulties in reading programs. A third major area of difficulty involves the materials of instruction. As long as teachers follow step-by-step the program outlined in the teachers manual, they are not troubled by the kinds of problems we have been discussing. But teaching involves much more than following a long-range plan. It involves adjustment of instruction to individual needs. Adjustment must be based on appraisal, and appraisal leads us back again to the semantic forest where elms are oaks, interpret is creative, and critical I is not critical II. We may be alerted to deficiency through appraisal, but appraisal must be directed toward improving instruction, and improving instruction implies that we know what we are trying to improve. Is there a series of behaviors representative of the wider range of measurable comprehension abilities which can be generalized to the total range through instruction? Or, must test equivalent exercises be used to provide experiences to improve comprehension? Effective instruction demands goal clarity. In the present state of comprehension, ambiguity predominates.

Critical Problems in Reading Comprehension

Confusions in the theory, measurement, and materials of reading comprehension have limited our effectiveness in two critical areas.

Problems in research interpretation. The first critical area in which ambiguity has been disabling is the interpretation of research. Suppose, for example, that two investigators comparing the same two methods get conflicting results in vocabulary and reading comprehension. Can these results be directly compared? Many factors might account for the observed differences, but let us consider the effect of terminology alone. How is vocabulary measured? Kelley (5) in 1932 located twenty-six separate item forms for vocabulary tests used at that time. Shall we assume that they are all comparable and that anything called vocabulary may be compared directly with anything else called vocabulary? As previously mentioned, the same problem exists with comprehension but is much more complex. Direct comparisons of comprehension studies in the investigators' terms, therefore, seem highly inappropriate, and application of such surface information may often be misdirected.

Problems in the testing-teaching situation. The second critical area is the testing-teaching situation. Here teachers are faced with all the problems involving measurement of comprehension (and the materials of comprehension), and in addition the problem of matching the instructional materials to the measuring instruments. This kind of problem is represented in the following example.

A child deficient in reading to evaluate-interpret on the Developmental Reading Tests is given exercises from available materials to improve these skills. The exercises are drawn from those which are listed in the materials under the titles "Evaluate" and "Interpret," and the teacher assumes that exercises labeled "Evaluative" are appropirate for a child whose deficiency is labeled "Evaluative." It should be clear at this point that labels often do not represent equivalent behaviors and that assuming equivalence may result in ineffective teaching.

Sources of Confusion

How has such confusion come about? Two sources which have contributed to the confusion are: the relationship of comprehension to intelligence and the use of terminology as personal convenience.

Confusion through relationship to intelligence. Reading is frequently referred to as a thinking process. We tend to accept the increasing correlations between I.Q. and reading achievement as we advance through the grades as evidence of the increasing involvement of the higher thought processes as the program grows in comprehension emphasis. It is not strange that theories of reading comprehension should closely parallel theories of intelligence, and the issues in defining intelligence are far from resolved. The same difficulties which plague us in dealing with intelligence are present in our deliberations about reading comprehension. Spearman (*8*) was mistaken when he wrote in 1927 that "Chaos can go no farther." He then added, "Intelligence has become a mere vocal sound, a word with so many meanings that it finally has none." This statement could not be more appropriate if it had been intentionally directed toward reading comprehension. A few parallels between intelligence and comprehension theories may be of interest.

The monarchic doctrine of intelligence, which we might associate with Stern's (*9*) thinking, considers intelligence to be a kind of adaptive power in new situations. This doctrine is similar to the view that reading comprehension ability is unitary and that unique reading behaviors are only specialized aspects of comprehension differentiated by the experiences of the learner.

A more frequently held position in comprehension theory resembles that of Spearman (*8*) on intelligence, which recognizes a general factor together with several specific abilities. However, the commonalities among two factor theorists disappear when an attempt is made to define those abilities.

Intelligence has been viewed by Guilford (*4*) as a three-dimensional structure. Each of many separate abilities is thought to involve a mental operation, a content or kind of material, and a product or form in which the information is cast. This theory combines some separate perspectives in a manner which could have some promise for reading comprehension.

One noteworthy attempt to combine perspectives in comprehension was made by Yoakam (*10*). He discussed purposes for reading in terms of work or recreatory life uses within each of the rate categories: skimming, rapid, normal, and careful.

A promising approach related somewhat to Guilford's (*4*) structure of intellect model might classify purposes within units and within rates. For example, we might speak of predicting outcomes from carefully read paragraphs. The terminology is still disturbing, but the three-dimensional structure may prove to be a useful device.

Problems in the testing-teaching situation. A second source of confusion in reading comprehension is that of labeling as a personal convenience. Terms must of course be employed if processes are to be described. The choice of terms is not being criticized here, since the terms selected by authors of comprehension discussions are usually reasonable ones. What is being questioned is the practice of personal labeling which forces the consumer to reconcile differences in perspective. Labels are useful when they serve as a descriptive convenience. However, the accumulation of such personal conveniences has been encumbering and has seriously limited the applications that can be made of comprehension data.

Recommendations

We are faced then with the problem of inconsistency in both theoretical base and descriptive terminology. Four suggestions may be helpful to us in understanding and working with reading comprehension.

First, it is suggested that teachers and research consumers become independent of labels. The materials of measurement and development in reading comprehension must be related in terms of the tasks represented, without regard to nomenclature. Teachers must therefore go beyond the labels of comprehension and look directly at the tasks. Instructional decisions can then be based on observable operations rather than on implied process.

Second, it is strongly suggested that comprehension be approached through operational definitions. To be thoroughly operational in description would be a significant advance over our present practice of personal reporting. However, to specify operations in terms of specific materials would make the mass of uncoordinated research largely incontrastable. It is possible, however, that we may be sufficiently operational to avoid naming the material and yet escape term ambiguity. The criterion for an effective comprehension definition or description should perhaps be facility in replicating that operation from the definition or description. For example, we may speak of following directions in sentence length material. To report growth in this ability is a considerable clarification of what might have been reported as growth in reading to organize.

Third, it is suggested that an attempt be made to operationally classify reading comprehension. Such a classification would provide us with a tool to aid description and evaluation of our work in comprehension. Labels could then be assigned to any combination of operations for descriptive convenience. But writers would be able to identify the specifics in each of their contrived categories, and we would know with some exactness what was being described.

Fourth, it is suggested that the accumulated data of reading comprehension be operationally re-evaluated. Efforts directed toward clarifying present research might resolve a number of inconsistencies, be productive of new insights, and suggest future directions for study.

Problems for Research

To implement the preceding recommendations, research might be directed toward the solution of the following ten specific problems:

Problem one. What comprehension models have been proposed by reading theorists, and what model of consistent terminology should be used to classify reading comprehension?

Problem two. What comprehension abilities are identified by reading theorists?

Problem three. What comprehension abilities are measured by reading tests?

Problem four. What comprehension abilities are developed by reading programs as described in the teacher's manuals, and with what emphasis in each series?

Problem five. What comprehension abilities appear most important in terms of frequency in the areas of theory, measurement, and program, and which categories of the theoretical model receive little emphasis?

Problem six. How closely do reading theorists, reading tests, and reading programs agree on the comprehension abilities identified and the emphasis given to each?

Problem seven. What comprehension abilities have been identified by factor analytic studies as reinterpreted in terms of the model?

Problem eight. How independent are the abilities identified?

Problem nine. Which abilities in terms of emphasis and independence appear to be important to measure and develop?

Problem ten. What interpretations of present research may be provided by a re-examination with reference to the model?

Reading comprehension is complex, and difficulties will not easily be resolved, but a classroom independent of labels, an operational approach to current research problems, and cooperative effort toward redefinition and re-evaluation may help us to reduce ambiguity and to restore communication.

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COMMENT

In this penetrating analysis Kerfoot has located a number of areas of confusion in the teaching of comprehension. His clear demonstration of ambiguity in labeling comprehension abilities calls for a major research and instructional effort to clear away the problems that imprecise terminology has caused.

Some of the confusion comes from the lack of specificity with which psychologists have been able to conceptualize and label the thinking processes. A partial solution of the problems which Kerfoot cites can come from our efforts to be precise in our use of terms. Some of the solutions can come from new insights provided by learning psychologists, but more likely from persons in reading who apply the findings of learning research to specific reading situations.—T.C.

DEVELOPMENTAL SEQUENCES AND LEVELS

Too many teachers, and the children they teach, are satisfied to attain literal comprehension. However, the truly effective reader puts each passage into context—relationship to surrounding passages, credibility in terms of previous learnings through life experiences as well as previous reading, pertinence to the problems in mind when reading of a passage began, intent of the author, intentional slant of ideas, omission of enlightening details, and other factors affecting authenticity.

The ability to read between and beyond the lines, to read critically is undoubtedly a developmental aspect of reading, and growing maturity should contribute to the ability and tendency to read in depth. Too, any one person at any one time may read at different levels—skimming to get information in literal fashion, scanning to determine pertinency to a specific problem, reading closely to determine the relative completeness or authenticity of the presentation, intensive study to decide on the possible ways of applying the ideas in an invention or original contrivance.

Whether in grade one or at the graduate level in the university, children and youth need definite guidance that will enable them to read at the levels of comprehension best suited to their purposes and needs to be satisfied through reading.

Reading for Depth

NILA BANTON SMITH*

ONE OF the most urgent educational needs of young people at the present time is that of learning to read in greater depth. One of the most urgent needs of teachers is that of recognizing depth-reading processes and providing for their development. Concern for these needs constitutes the substance of this paper.

First, let us consider the need for recognizing the different categories of meaning-getting processes in reading. To do this we must break down the big blanket term of *comprehension.* This word entered our reading vocabulary back in the early twenties when we first began to give attention to meanings. We have used it indiscriminatively ever since and in my opinion this omnibus term has stood in the way of developing true depth in reading. There are different kinds of comprehension which in turn call for the use of different mental processes. Depth reading cannot be developed by teaching "comprehension" as a lump sum.

The different categories of meaning-getting processes as I see them are: (1) literal comprehension, (2) interpretation, and (3) critical reading.

Literal comprehension names the skill of getting the primary, direct, literal meaning of a word, idea or sentence in context. There is no depth in this kind of reading. It is the lowest rung in the meaning-getting ladder, yet it is the one on which teachers of the past have given the most practice.

On the other hand *interpretation* probes for greater depth. It is concerned with supplying meanings not directly stated in text. In interpretation the reader must think back of the mere symbols and infer meanings not directly apparent in the word symbols, themselves.

The third growth area is *critical reading,* the one with which we are directly concerned in this program. Many people apply the term critical reading to any kind of careful, discriminative reading. For skill development purposes, I like to single out critical reading as a special kind of reading requiring special teaching techniques.

**Reading and Inquiry, IRA Proceedings, 10,* (1965), 117-119.

Critical reading, as I see it, is the third level in the hierarchy of reading-for-meaning skills. It involves the literal comprehension and the interpretation skills, but it goes further than either of these in that the reader evaluates, and passes personal judgment on the quality, value, accuracy and truthfulness of what is read.

This distinction is appropriate in terms of the meaning of the word *critical*, an adjective derived from the noun *critic* which in turn has as one of its foreign sources the Greek word *krinein* meaning "to judge, discern."

One dictionary definition of *critical* is "exercising or involving careful judgment; exact; nicely judicious as a critical examination." Another dictionary defines critical as "to judge with severity."

Critic is defined as "one who expresses a reasoned opinion . . . on any matter . . . involving a judgment of its value, truth or righteousness . . ." *Criticism* is defined as "A critical observation or judgment;" and criticize is defined thus, "to examine and judge as a critic."

In consideration of the meaning of critical it would appear that we are stretching things a bit too far when we lump together practically all of the skills that make use of thinking processes in reading under the present popular term of "Critical Reading." For the sake of having clear-cut objectives in teaching, might it be advantageous to designate critical reading as the kind of reading done when personal judgment and evaluation are involved.

There is a grave need at this time for us to develop this higher skill of critical reading. In fact this need is so urgent that it should be considered as a national obligation. The American citizen of today needs to be fully acquainted with the happenings in his country but the time has passed in which he can be smugly concerned alone with events which take place in the United States. He is involved with the whole world and the whole world is involved with him. World events are having, will continue for a long time to have, tremendous impacts on us in America personally, socially and politically.

From whence does the most of this information come and who interprets it? For all too many people the major source of national and world affairs is TV or radio, and this news is either presented as a list of headlines without interpretation; or if interpretation is made it is translated to us in the light of the individual belief, judgment or interest of the commentator. TV and radio are powerful molders of opinion because people accept their capsule statements and comments without acquainting themselves with the background necessary in interpreting the facts and arriving at their own conclusions.

It is true that the business or professional man may snatch a paper at the news-stand to read on his way to or from work or perhaps he and his family may read a daily newspaper left on the doorstep of his home. In either case he will come in contact with world news in more detail than given by TV or radio, but again let us ask who interprets this world news for him? It is the reporter or editor who writes the account of a happening; it is he who gives his viewpoint concerning the event and its implications. We need desperately at this moment in our history to develop individuals who will read about an important event in two or three newspapers and magazines, comparing the information given, sifting the wheat from the chaff, arriving at their own conclusions, and sensing implications for themselves as American citizens.

I was in an eighth grade classroom recently when the teacher asked the students what had happened in Vietnam the day before. All of them did know what had happened but discussion was meager. I asked, "How many heard about this event over TV? How many over radio? How many read about it in a newspaper?" The most of them had heard about it over TV, two or three over radio. None had read about it in a newspaper. No wonder they couldn't discuss the situation. They had no background of detail or variance of opinion. One of the most urgent things that we can do is to get students to read widely and critically about current happenings.

Propaganda is another facet for critical reading consideration. Propaganda has been defined as "any intentional attempt to persuade persons to accept a point of view or to take a certain line of action." With so many people these days trying to change our thinking and to influence our behavior through printed material, we as teachers should be acquainted with the dangers of propaganda and should teach our students to recognize some of the major techniques used by the propagandists in political speeches, advertisements, editorials, cartoons, billboard announcements; in fact wherever it is found in a world that is now teeming with propaganda intentions.

Students in the junior high school have reached a degree of mental maturity which makes it possible for them to do careful critical reading. Let's give them abundant practice in using this important skill.

Necessary Preschool Experiences for Comprehending Reading

MARION MONROE*

THERE is perhaps no one area in American education that has received more popular attention than that of how to teach Johnny to read. If only the teacher would use this or that technique, Johnny would have no difficulty.

Every child that comes to school, however, brings with him his own unique experiences which affect his ability to learn to read for good or for ill. Each new learning experience is modified by the experiences of the past.

The ease with which a child learns to read depends upon four variables, (1) the child, whose abilities and experiences are uniquely his, (2) the teacher who also varies in her abilities, training, experience and understanding of children, (3) the content of the material the child is asked to read, and (4) the group in which he is placed to learn.

All these factors and many more make learning to read a complicated procedure. It is not surprising that every year many children encounter difficulties in learning to read. In this paper, I will consider chiefly the *preschool experiences* which get a child off to a good start in learning to read and those which may serve to retard the child's beginning efforts.

A child's preschool experiences with books set the stage for motivating learning to read. A child who has had pleasurable experiences in hearing stories read aloud to him has a preview of the rewards of reading. He looks forward to reading by himself, to take his place in a cultured family group. He knows that printed words stand for language. The print in books cues the oral reader as to what to say.

A child who lacks these happy experiences with books has little desire to read. He may reject reading from the start, as something that does not appeal to him, and for which he sees no use.

Reading is one of the language arts. The child obtains ideas from printed language in much the same way that he understands spoken language. If a child has heard and used language patterns like those in books, he has a basis for comprehending the book. As one child said, "Reading is just talk wrote down." Reading, however, is more than just de-coding a set of printed symbols into spoken words and recalling what the words mean. The printed text in a primer is formulated in *standard speech*, while the child's use of language may be anything but standard. The child who comprehends "Tom gotta dog" does not necessarily comprehend "Tom has a dog." The child who says "Whatcha gonna do?" may not immediately understand the printed words, "What are you going to do?" Dialects, foreign language, substandard English, and simply the fact that we usually run the sounds of spoken words together in the pattern of conversational speech, may make the printed language in a book seem as strange and devoid of meaning to some children as if they were mastering an almost new language.

A scale is presented here for evaluating a child's language ability in interpreting pictures. Select pictures in which two or more characters are engaged in some interesting activity. Ask the pupil, "What is this picture about?" Record his verbal response and classify its level on these steps.

Step 1. The child merely shrugs his shoulders and does not reply. He may venture to name some of the objects in the picture, i.e., "dog," "boy," "It's a kitten."

Step 2. The child describes what the characters are doing, i.e., "The dog's jumping up," "The baby's eating."

Reading and Inquiry, IRA Proceedings, 10, (1965), 45-46.

Step 3. The child expresses a relationship between the characters or objects. "The boy's playing ball with the dog."

Step 4. The child sees the picture as one part of a narrative. He gives relationships of time, place, cause-effect. "The boys are building a bird house. They will put it up in a tree so a bird can built a nest in it."

Step 5. The child reacts to the mood of the picture, perceives the emotional reactions of the characters, and draws a conclusion or evaluates the actions, "This picture's about camping. It's a dark night and the children are kind of scared. They're singing songs around a campfire. Wild animals won't come near a fire."

Children who have not reached *Step 3* or *Step 4* on this scale scarcely have developed sufficient language ability to interpret a picture in a primer and react to the narrative text that accompanies the picture. Fortunately many verbal skills can be developed in pre-reading activities if the child is of average mental ability.

The non-English speaking children will need to learn the names of familiar objects in the environment and in the pictures. By asking, "What is the boy doing?" "Where is he?" "Why is he painting the wagon?" "What will he do next?" "How does he feel?" you can encourage the growth of vocabulary and sentence usage.

Not every child who uses language well is ready to read, however. A printed word is a complex organization of small forms and shapes called letters. Some children have never had the visual experience of comparing and examining the small details of objects.

In order to discuss and compare visual qualities the children need to develop a *vocabulary of descriptive terms,* large, small, round, square, pointed, straight, curved, to the right, to the left, above, below, upside down and so on. Armed with a descriptive vocabulary, the child is prepared to compare and describe printed words and letters.

Accurate description indicates accurate perception and relates visual and language development.

The child in reading moves his eyes from left to right. Children who have had the "funnies" in newspapers read to them as they follow the row of pictures across and down the page may have already established the habit of left-to-right progression. To discover children who have not established the conventional habit of looking from the left toward the right, you may make a card containing several rows of pictures. Ask a child to name the pictures, and observe the order in which he does so.

Early preschool experiences with rhymes and jingles help to prepare children for listening to the sequence of sounds in words, to find words that begin or end with similar sounds. Children whose preschool lives have been barren of these joyful experiences in listening need to be provided with such experiences before beginning to learn to read.

Learning to read is a complex process which has its beginnings long before the child actually associates printed symbols with their language meanings. So-called reading readiness activities are actually the early basic steps toward reading that many children go through in cultured homes where they are exposed to the reading activities of parents and families. If a child has missed these experiences at home it is only a matter of wisdom to provide him with the most essential of them in his early days at school. "Well begun is half done" is an adage that bears fruit in the process of learning to read.

Pre-reading activities that sharpen a child's perceptive abilities may be likened to giving him foreknowledge of the tools of his trade. An artist needs to know how to use his tools. But good tools alone do not make an artist. He must have within himself the picture he wants to paint. So it is with the potential reader. He must have within himself the need and desire to read because he knows what the rewards will be.

And Beyond the Lines

VIRGINIA CUTTER*

ONE OF THE MAJOR responsibilities of today's teachers is teaching reading as a thinking process, teaching children to think as they read. For it is the thinking reader—the critical reader—who has the foundation for evaluating what he reads. In discussing the building of this foundation, we may begin with Helen M. Robinson's reminder that "critical reading is based on, or is an instance of, critical thinking."[1]

Edgar Dale defines critical thinking as "thinking which has been systematically criticized," as "the kind of sustained thinking necessary to deal adequately with such questions as: . . . 'How can I improve my teaching?' "[2] It leads to the kind of reading that asks such questions as, "Should Antigone have been loyal to her dead brother, Polynices, or to her country?" And what does this play have to do with my life today? And why is it considered a "classic" anyway?

Mortimer J. Adler, in *How to Read a Book,* describes the kind of reading necessary to produce this kind of thinking:

> When [people] are in love and are reading a love letter, they read for all they are worth. They read every word three ways: they read between the lines and in the margins; they read the whole in terms of the parts, and each part in terms of the whole; they grow sensitive to context and ambiguity, to insinuation and implication; they perceive the color of words, the odor of phrases, and the weight of sentences. They may even take punctuation into account. Then, if never before or after, they read.[3]

We might summarize his delightful description by saying that critical reading—whether it involves reading a news story in the morning's newspaper or a masterpiece by Nathaniel Hawthorne in the school textbook, or a love letter—should involve three levels of comprehension.

Reading the lines:
WHAT DID HE SAY?
Reading between the lines:
WHAT DID HE MEAN?
Reading beyond the lines:
WHAT GENERALIZATIONS MAY BE DRAWN?
WHAT EVALUATIONS MAY I MAKE?

As we are concerned with teaching these levels of reading in all types of literature, we are, of course, actively engaged in teaching critical reading of literature.

We must begin with what we might call the facts—the words in the sentences, the sentences in the paragraphs, the paragraphs in the work of literature. What do they say? To teach critical reading, we must have a passion for accuracy. One day, a child in a teacher's class read the word *home* as *house*. The teacher's first reaction was to ignore the substitution; it was such an easy error to make. Then she realized that *house* had few of the rich connotations of the word *home* as it was used in the story. By misreading the word, the child had been unaware of some of the "facts" of the story. A whole point would have been lost, the teacher who told this story reported, had she accepted the child's substitution. Every teacher has had similar problems, enough to convince each of them that reading of literature—reading a poem by Frost or a short story by Hemingway—begins with reading the words, the phrases, the sentences as the author wrote them—reading the lines.

The second level of comprehension becomes possible only when we have mastered the first. A student can read *between* the lines only when he can *read* the lines. What did the author really mean? What inferences may be drawn? What is Emily Dickinson really saying when she speaks figuratively? Why does Shakespeare begin *Julius Caesar* with the scene that he does? Why does e. e. cummings call the balloon man "goat-footed?" Why? Why? And for every answer there must be proof in the literature itself. It's easy to see how developing this level of comprehension is, in effect, developing the ability to think critically about what is read; in other words, to read critically.

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[1] Helen M. Robinson. "Developing Critical Readers," *Dimensions of Critical Reading*. vol. XI, Proceedings of the Annual Education and Reading Conferences. Newark: University of Delaware, 1964, 3.

[2] Edgar Dale. "Teaching Critical Thinking," *The News Letter*. vol. XXIC, No. 4. January 1956.

[3] Mortimer J. Adler. *How to Read a Book*. New York: Simon and Schuster, Inc. 1956, 14.

* *Vistas in Reading, IRA Proceedings, 11,* Part 1, (1966), 61-68.

Finally we must teach reading beyond the lines. How do I evaluate this story, this play, this poem? In the *Texas Curriculum Series,* the Commission on English reported that the reader must learn "that *no* evaluation [of a work of literature] is permissible (or indeed, possible) until a work has been understood."[4] What was said? What does it mean? Finally, what is it worth? As William S. Gray said, "One of the first tasks of a teacher is to encourage students to withhold judgment until they are sure they fully understand the book or selection read."[5]

The student can move to the third level of comprehension only after he has moved successfully through the first two.

John Simmons wrote in an issue of the *English Journal:*

> Teachers require a series of reactions to the literature read, both in speaking and writing. In this they are asking for critical reading, a task which should be central to reading assignments in all secondary content areas. Students must go beyond mere passive acceptance, or comprehension; [in other words, beyond levels one and two] they must do something with what they read. In evoking a critical response, teachers are moving students toward more *mature,* sophisticated reading activities.[6]

Everyone, it seems, tells us to teach critical reading, but very few writers tell us *how* to go about that job.

We begin, according to Anne Stemmler,[7] director of the reading-study center at the University of Texas, by selecting material, literature in our case, within the experiential background of our students. To expect a junior high school student to read Eliot's *Waste Land* critically is to expect the impossible. He may learn to parrot our reactions to and judgments of such literature, but he cannot, on his own, read critically literature so far beyond his realm of experience. Once appropriate selections have been made, Stemmler continues, the art of teaching critical reading next involves the art of asking questions.

To teach comprehension in depth, she tells us, we must develop the ability to ask questions that send the students into successively deeper levels of meaning. "Ask low level questions," she maintains, "and you teach low level comprehension." The twin arts of question design and progression are among the most critical aspects of teaching deep-level comprehension. Our sequence of questions may begin with questions that ask for mere recall:

What does the author say?

In your own words describe how the main character looked.

But our questions must soon progress beyond this level into the non-literal:

What does the author mean?

What does the main character symbolize?

And, finally, to encourage real depth of understanding, our questions must lead the student into generalizing, into evaluating, into applying what he had read in other situations. Once we have designed our questions and planned their progression, our task of *teaching* critical reading has really just begun. Now, according to

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[4] *Texas Curriculum Studies.* Report of the Commission on English Language Arts, Report No. 2. Austin: Texas Education Agency. July 1959, 47.

[5] William S. Gray. "Increasing the Basic Reading Competencies of Students," *Reading in the High School and College.* Forty-seventh Yearbook of the National Society for the Study of Education, Part II. Chicago: University of Chicago Press. 1948. 107.

[6] John S. Simmons. "Teaching Levels of Literary Understanding," *The English Journal.* Vol. 54, No. 2. February 1965, 101.

[7] Anne Stemmler. In seminar at The University of Texas, Spring, 1966.

Stemmler, we must analyze our questions for the demands they make upon the reader. What reading-thinking abilities are evoked by each?

Level-one questions cause little trouble. The student is being asked simply to recall information read, or to search through the material for specific information given. Our students may do these tasks with ease. And when they do, they're ready to move into the more difficult, non-literal, level-two. Here even our high school students may require much help. Just exactly what does a student do to find meanings which are implied? Of course he brings into play the basic processes of recalling and searching. But beyond these tasks he must analyze, synthesize, and extend meanings. In teaching the student to handle these tasks, a teacher may well begin by sharing with a class the steps through which she has gone in arriving at implied meanings—a difficult job for most teachers read easily, and the easier the job the harder it is to explain to someone else exactly how it was done. But what an important learning experience this can be for the students. The teacher might take a short piece of literature, familiar to the class, and show them *how* she read it: how she analyzed it, categorizing the kinds of incidents, images, words used; how she drew together—synthesized—the information collected; how she generalized about what it all added up to, what it really meant.

The students are given opportunities to go through these same processes. Over and over on literature well within their range of experience and ability. They learn to analyze, to synthesize, to extend. And as they are learning we are constantly aware of their successes and failures.

Only when understanding of the work seems assured, may we move to level-three questions, those calling for further generalizing and evaluating, for applying insight gained from reading in new situations. Additional cognitive processes are involved here. The students must now compare, contrast, extrapolate. He must hold in mind a set of criteria and measure the work being read against that criteria. Weighing, testing, trying out ideas, he may need to apply what is in one situation to other situations. He may need to call to mind other works of similar theme or style. He may need to move beyond the specific to the general.

To help students arrive at this point as readers, we need to lead them to formulate their own questions and to seek their own answers:

What does the title tell me about this story?

Why does the author begin as he does? End as he does?

From whose point of view is the story told?

Is this point of view significant?

What ties the episodes of the story together—the characters? the action? the setting? a stated idea? an implied idea?

What does every important detail of the story add up to?

What may the central theme(s) be?

What evidence in the story supports the generalizations I am making?

Questions such as these send the student to the story itself, not to a summary of the author's life or to a headnote in a textbook. The critical reader must ask and answer questions such as these. For only after asking and answering these and other questions may the student evaluate the story. And only as he learns to form valid judgments based on reading not one, not two, but dozens of stories, does he truly mature as a reader.

There are still other experiences basic to teaching our students to read critically. Somehow we must free them from the idea that everybody must have exactly the same response to and interpretation of a work. They do *not* have to admire every poem we admire, or to read many of them in just the same way. As we all know, but somehow our students don't seem to, there's evidence in most works to support more than one valid interpretation. We must help them to understand how their backgrounds and experiences, different from everybody else's in the class, will partly determine how they respond to some works. A simple exercise like one used by Allen Briggs, professor of English, Sul Ross State College, is applicable here. He has his students read Carl Sandburg's *Fog* and then draw a sketch of the cat they see in the last sentence. Of course we know that our students can read this poem, can read the lines and between the lines, and beyond the lines, and still come up with different pictures. That a cat is a cat is a cat is not for our students—all of whom have known different kinds of cats and who consequently react to them in different ways.

Everything that we've said so far has assumed that our students can, at least, read the lines. But what about the retarded reader and critical reading? George Spache, at the Texas Association for the Improvement of Reading meeting in February, 1966 told a group that the retarded reader, particularly at the upper grades, may lack the word attack skills. To expect him to move into reading levels two and three—to read critically—before he has mastered level one is unrealistic. Much modern literature on the teaching of the educationally disadvantaged student suggests that the teacher read aloud or present by tape, record, or other audio-visual media some literature within the interest and experience range of the student, but beyond his present reading skills. His ability to think critically, a prerequisite to reading critically, can be fostered by encouraging discussion about, and reaction to, what he has heard. As his skill in reading increases, he can be led through the same carefully structured experiences in the reading/thinking skills that other students have had.

My final comments concern what effect teaching critical reading as a foundation for evaluation may actually have on our teaching—at the seventh, eighth, or ninth grade, or at whatever level we teach.

First, if we are really using literature to help our students to read critically, then we may have to change some of our present practices. Such reading of literature as described here implies thoughtful study, careful study, prolonged study. That kind of study, of course, means the studying of fewer poems, stories, works of literature. Notice I didn't say reading fewer; I said *studying*. Our students may be reading dozens of pieces in and out of class which we won't *study*. No longer must we think in terms of covering an entire anthology. We must be selective. For class study, we must severely limit the number of selections we teach. Thus, the first result of teaching critical reading of literature will be—paradoxically—to teach "less" more! In other words, to emphasize depth reading, not surface reading. And it means this at all grades. Jerome Bruner says that "intellectual activity anywhere is the same, whether at the frontier of knowledge or in a third-grade classroom. . . . The difference is in degree, not in kind."[8] For our purposes we may take that to mean that the seventh grade student may be taught to read in depth just as the twelfth grade student is taught. What will be different will be the kinds of materials with which we teach him the process of close reading, of critical reading. The works of literature will be appropriate to the maturity level of the students.

A second consideration: these fewer selections, more closely read, will be taught in a different way. The critical reader is, above all else, an *independent* reader. To develop such a reader requires inductive teaching more than deductive teaching. The kind of teaching which asks questions which encourage students to seek answers. As one writer says, more draw-it-out teaching and less pour-it-in. The kind of teaching, as G. Robert Carlsen has said, which stimulates the student to teach himself. Such teaching is of necessity a slower process than the one most of us were taught by—the teacher or the textbook gave us the questions and told us the answers; our job was simply to memorize what we were given. In developing independent, critical readers, we must help students to "build [their] own meaning—[their] own understanding and appreciation—to ask and answer [their] own questions,"[9] as Mac Klang has suggested. We must encourage more student involvement with the work of literature. Students must have time, he added, to think and feel about the pieces they read, time to voice those thoughts and feelings. In this kind of teaching, a class may spend a day, two days, a week discussing a single short story or poem. What we are teaching here is not a short story or a poem but a *process* of reading a short story or a poem which the student in turn will, on his own, transfer to other short stories and poems; habits of reading which the student will carry with him long after he has forgotten the specific pieces of literature which he studied in school. Bernice E. Leary was saying as early as 1948 that "guiding students in the technique of novel-reading should ultimately supplant novel-teaching."[10]

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[8] Jerome S. Bruner, *The Process of Education*, Cambridge: Harvard University Press, 1963, 14.

This brings up another problem. Examinations which simply test students' recall of specific works of literature may no longer be valid if we are more concerned with habits of reading than with the works read. We need to use the technique of the *End of the Year Examination*[11] in which students are given an unfamiliar piece of literature and then asked questions about it.[12]

For example, at the end of a unit on poetry, our test may be to give the students a short poem, similar to those studied but not from that group. Our questions about the poem will demand that the students apply the reading skills they have been learning.

We'll ask questions about what was specifically stated and what was implied; and we'll ask about the meaning of the whole, and the meaning of the parts; and we'll ask for generalizations and evaluations possible only after thoughtful reading and rereading and reading again. And over and over we'll say, "Give examples. Cite your proof. Refer to specific words and lines."

How do we teach our students to evaluate what they read? We begin by teaching them to be critical readers, readers who weigh and consider, readers who *think* as they read.

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[9] Mac Klang. "To Vanquish the Deadliest Game: A New English Curriculum," *The English Journal*. Vol. 53, No. 7, October 1964, 509.

[10] Bernice E. Leary. "Reading Problems in Literature," *Reading in the High School and College*. Forty-seventh Yearbook of the National Society for the Study of Education, Part II. Chicago: University of Chicago Press. 1948, 143.

Achieving Personal Maturity Through Reading and by Recognizing and Constructing Meaning

PHILLIP SHAW*

This paper will comment on the four skills into which Gray and Rogers classify the reading competence of the mature reader.

1. *Abilty to grasp literal meaning.* Even the simplest literal meaning is not an intrinsic quality of the printed page. Just as TV signals hurrying over a city require a receiving set to give them life, printed words needs a perceiving mind to grant them the reality of meaning. Through the magic of the mind, insensate symbols tell of Alexander, Agincourt, or agrarianism; of atom-smashing or vapor-cloaked Venus; of permutations and combinations or the square of the hypotenuse; of Mr. Prufrock or the Wife of Bath.

The ability of printed symbols to be transformed into literal meaning depends upon the reader's thinking habits during reading. Before plunging into a chapter of an unfamiliar textbook, the competent reader first turns to the table of contents to note the author's organization of the matter, in particular the relation of that chapter to the others. Then, as he reads the particular chapter, he is constantly alert to divisions of the chapter, to further subdivisions, such as marginal notes and paragraph breaks, and to other clues to the author's organization. In short, the competent reader thinks in outline form as he reads, recognizing details as parts of main ideas, and main ideas as parts of broader main ideas or as comprehensive ideas themselves.

To think in outline form during reading, the competent reader must constantly vary his procedures. Now he skims over several pages for an over-view based on sentences in bold type and on charts and diagrams; now he reads a paragraph slowly because it describes an idea difficult to grasp; now he scoots through another paragraph which states supplementary matter that he does not wish to study at the moment; now he turns back a page or two to check the relation of an idea there with one he has just read; and new he looks away from the page for a moment to chew upon the ideas that have piled up in his mind.

Among causes of poor reading, a failure to recognize literal "whole" meaning can be basic. The chief weakness of a "slow" reader, for example, may simply be that he *must* plod over the page word-by-word, since he has not grasped the main ideas that make the words meaningful. A person who gets satisfaction out of only study-type matter and who never sallies into a book for sheer enjoyment may be limited in his reading simply because he fails to recognize main ideas. Greater unity of thinking is required during the reading of literature than the studying of informational matter.

The student who reads for facts without too much attention to main ideas is hardly achieving personal maturity through reading. He gets out of school what Sidney Hook calls a *literal* education, as opposed to a *liberal* education. His mind contains a conglomoration of scraps of information, inviting Whitehead's observation that "the merely well-informed man is the most useless bore on God's earth."

2. *Ability to recognize implied meanings.* A striking example of implied meaning, as distinct from literal meaning, is the different connotation of certain words according to whether they are used in a formal or popular sense. For example, a *cunning* child may mean "attractive" or "sly," a *mad* man, may be angry or insane; and the expression "fourteenth-century *ladies*" may refer to all females of that

century or only to those of good breeding.

Besides varying levels of usage, another cause of different implied meanings is false association on the reader's part. La Brant described how a student entirely misunderstood a story because of the word "orphan." To the student "orphan" connoted "poor, defenseless child," a meaning alien to the story. Booth pointed out similar confusion about the word "prodigal." Because of the moral of the prodigal story, to some students this word necessarily connoted "repentant," or "wicked."

Custom has made certain words two-faced. For example, an author can use the following terms with either good or bad implications: "politician," "socialistic," "traditional," "juvenile," "average." An author can deliberately give a one-faced word a second face by a mask of connotation. Thus, to emphasize his belief in basic knowledge, Stuart Chase described what all educated persons should know by the phrase, "the minimum *furnishings* of the mind." On the other hand, Cleanth Brooks gave an unsavory implication to the practice of paraphrasing literature by associating it with an unfavorable word in the phrase, "the *heresy* of paraphrase." An educator has engagingly ridiculed the theory that students should be grouped in the classroom according to ability, by referring to the three usual groupings as "chant," "pant," and "can't."

Not merely an attitude but a profound idea can be expressed by an author through connotation rather than denotation. The literal meaning of the following couplet by Pope is that people wanted to rush home to eat, but the implied meaning is a thrust at self-interest: "The hungry judges soon the sentence sign, And wretches hang that jury-men may dine." Some writers may write scornfully of literature as "old," but this is far from the implication of the term in Bulwer's advice: "In science, read, by preference, the newest works, in literature the oldest." Finally, we owe to *Harpers* the engaging irony of the following proposal by an efficiency expert reporting on a symphony concert: "Scores should be drastically pruned. No useful purpose is served by repeating on the horns a passage which has already been handled by the strings. It is estimated that if all redundant passages were eliminated the whole concert time of 2 hours could be reduced to 20 minutes and there would be no need for an interval."

Recognizing an author's implied meaning is a prerequisite to achieving personal maturity through reading. The reader who overlooks implications in the printed page can miss as much as a tone-deaf person at a Sibelius concert.

3. *Ability to recall related experiences during reading.* Psychologically, this ability requires the reader to be willing to change himself a little through reading. As he reads, the competent reader constantly modifies his knowledge and values, strengthening or revising them. The incompetent reader either stands too pat on his previously learned ideas or accepts the authority of the author almost reverently.

The stand-patter is difficult to budge. He brings to the page an amalgam of learned ideas, imbedded in his mind like the multiplication tables. The ideas kindled in his mind by the words he reads can be as unrelated to the author's intended sense as the ringing of a bell to the flow of saliva. Thus the "hot-rod" whose driving license has been revoked will be prone to interpret any police action he reads about, as meddling or harsh. Any printed reference to "school" can conjure in the mind of an unruly pupil an image of tyranny and punishment. When an unfortunate child of quarrelling or separated parents reads about happy family life, he may experience feelings of disbelief or resentment entirely alien to the author's intention.

Many of the incompetent reader's imbedded ideas are fully dressed in words. Such are trite comparisons: "busy as a bee," "patient as a spider," "like rats in a trap," "fat as a horse," "snug as a bug in a rug." When the incompetent reader sees the word "bee," "spider," "rats," "horse," or "bug," the memorized comparison at once colors the meaning he gets from the page. Certain notions about history, practice, beauty, ignorance, and familiarity likewise stand in the vestibule of his mind fully clothed in words, waiting to be welcomed whenever these ideas crop up on the printed page: "history repeats itself," "practice makes perfect," "beauty is skin deep," "ignorance is bliss," "familiarity breeds contempt."

It is a standing joke that stubborness in beliefs is a sign of old age. Nevertheless, reliance upon a clear-cut moral code is the refuge of the confused adolescent. During adolescence, a pat moral code gives order and logic to this sometimes melancholy, sometimes enormously happy stage of growth. For example, the incompetent adolescent reader may interpret characters in literature on the basis of the tidy categories of "good" or "bad." Good is a strength, evil is a weakness. This attitude is rather comically illustrated by the youngster who, upon joining a TV group watching a play that has already begun, asks: "Who's good? Who's bad?" Emerson's idea that "every hero becomes a bore at last" is absolutely out of the ken of students bent on admiring goodness, and shadings in the characters of scoundrels like Satan, Iago, and Claudius are utterly ignored by students who classify all men as either saints or devils.

4. *The ability to reach conclusions or generalizations not stated by the author.* The competent reader is always seeking when he reads. An habitual newspaper reader usually is so personally involved in the outcome of current happenings, the developments of which are described from day to day, that if he cannot read his daily paper he loses his peace of mind. The necessity of having something to *do* while reading is brought out inversely by a recent cartoon which represents a housewife who enjoys chatting with friends as she reads, as saying: "I like to talk while I read. It gives me something to think about."

Of course the compulsion to reach conclusions during reading is more readily felt when one is reading for information, as distinguished from reading for sheer enjoyment. One may read literature simply to drug himself into a semi-comatose state of daydreaming. Thus he identifies himself solely with the characters and situations of the book. He never meets the ultimate vital presence, the author himself. A vital presence abides in all kinds of books, including textbooks. To meet this vital presence—this is the consummation demanded by the mature person from whatever he reads.

Three Important Levels of Comprehension

LEONARD W. JOLL*

THE ROLE OF THE TEACHER in the secondary school is closely related to the entire reading program of the student. In considering this aspect there are three levels of comprehension which should be given careful attention. First, there is the level of literal reading where the student gets full and accurate meaning from the lines. Second, there is that of critical reading which involves the ability to read carefully and to reaact intelligently to the presentation of the author. Third, there is that of reading interpretatively which not only involves the previous two levels but requires a sensitiveness and involvement on the part of the reader. It cannot be assumed, under any circumstances, that a student who reads without error is fully competent in all or any one of these areas.

What are the involvements of literal reading? Each teacher who expects students to get information from the printed page will involve these students in literal reading. Gray called particular attention to this function in the Forty-Seventh Yearbook (*3*). It was further emphasized by Karlin (*5*) and Stauffer (*7*).

In teaching literal reading the following areas must be carefully considered.

Vocabulary: There are many words which have many meanings. Some of these meanings may be exact or denotations while others may be implied or connotations. Each area of concentration has its own vocabulary. In order to get full meaning from the printed page in any area, a thorough understanding of the vocabulary must be had by each student. The development of this understanding becomes the resonsibility of the teacher working in the area of content. If this teacher is the expert in the area, then he should be the expert in developing the right concept for each word of the vocabulary in this area.

Use of context clues: The use of context clues is of vital importance to a student in developing competency in literal reading. Not only must the student be able to use context clues but at the same time he must be able to judge if the meaning he is deriving is reasonable. It must be remembered that in many cases the use of contextual clues is actually little better than an outright guess. Because of this factor, when a student arrives at some conclusion as to the possible meaning of the word from the contextual setting, he should check the dictionary if the meaning does not seem reasonable.

Dictionary skills: Dictionary skills are not only needed in literal reading, they are needed in every phase of word attack as a final resource. It is regretable that not all students are facile in the use of the dictionary. The first instruction in its use may have been somewhere between the third and fourth grade. This work does not in any way guarantee that the skill was well developed or that the student has continually tried to improve himself in this skill.

Materials: In selecting materials to develop literal reading care should be taken to avoid those which go into a considerable amount of elaborate description or which tend to be debatable. A frequent error of secondary pupils is to read into materials ideas and thoughts which do not exist. Material which is highly factual and well organized lends itself very well for the development of literal reading.

Forging Ahead in Reading, IRA Proceedings, 12, (1967), 115-118.

It is a common failing of students in reading science to react to what they think is in the chapter. The same holds in reading mathematical problems. In developing materials in these fields the authors have neither time nor space to go into nonessentials. The facts are all there; it is up to the student to identify them. In developing competency in literal reading we must aim for a high degree of comprehension and accuracy. There is no place for assumptions in literal reading.

Probably one of the areas which has drawn the most comments in the teaching of reading in the secondary school is that of critical reading. It would appear that we have three areas in critical reading: the first is to be able to read and question; the second is the ability to pick and choose those materials which best serve our purpose; while the third is to be counted and to pass judgment upon. Even though they are frequently classified under the heading of critical reading, they are in fact quite different. Teaching a student to read and question certainly should come before teaching him to read so that he can pass judgment. When a student is able to read and question, then, and only then, has he fully involved himself in thinking about the topic which is being presented. As has been so well expressed by Roma Gans, he sees relevance in what he reads. He is able to determine if what he reads is satisfying his need for reading. Gans has given us four excellent points to consider in teaching the second aspect of critical reading (*2*). The first is the awareness of the need to evaluate the source of material read. The second is the ability to assess the ways in which words influence ideas. The third is the ability to select wisely what is to be read. The fourth, which is without a doubt the highest level in this aspect of critical reading is the ability to make selections which are based upon the reader's own intellectual processes and not upon authority.

The third area of critical reading is the willingness to be counted and to pass judgment on what has been read. In our fast-moving world we too frequently find multitudes of readers who do not appear to know the difference between fact and opinion. It is one thing to be able to sift through thousands of words and to derive some general ideas, but it is far more important to be able to cut through this verbiage and arrive at a conclusion which is well founded and backed up by carefully organized and clearly presented facts.

One might ask how is it possible to arrive at a stage where this ability to cut through is well established. Certainly it does not come overnight. The reader not only must be proficient in literal reading but also he must have added a great amount of breadth and depth to his reading. One would not expect a lawyer to present a case in which he had not previously done research. The critical reader must be able to bring to bear the fruits of considerable reading in many areas. The critical reader must realize that if he is to make his point, then the tools he uses must be very sharp and well honed. Denberg and Jones (*1*) have summarized this skill very well with the following points: 1) precision with word meanings, 2) an awareness of possible semantic confusion, 3) careful structure of thought, and 4) recognition of implicit assumptions.

We frequently hear critical reading referred to as the ability to read between the lines. In order to do this the reader must closely observe the several points which have been developed. Yes, it is the ability to read *between* the lines but never to read *into* the lines. Materials to teach critical reading should involve newspaper editorials, commercial advertisements, investigation reports, inferences, and establishment of proof.

Without doubt, interpretive reading is probably one of the highest levels of competency in the reading skills scale. There are many who attempt to teach this skill, but few have many of the necessary qualifications.

William S. Gray (*4*) pointed out that since 1917 many studies have been reported on teaching and developing competency in interpretive reading but that there did not appear to be too much agreement on how it should be done. Time and again we have heard the old story of the many rich experiences one may have from reading: that from the printed page the reader may vicariously partake in any of the experiences known to man. One could be led to believe that all that is necessary is to make a student an accurate and fairly flexible reader and the task will be accomplished. The development of effective interpretive readers is not this easily done. The development of the interpretive reader must have an early beginning. Rich, indeed, is the child whose parents surround him with a great variety of books and then take the time to enjoy these books with the child. To enjoy books is to live with them and to know their characters. Children both want and need to be read to. This is a practice that should not terminate in the lower grades. I have never known a group who did not enjoy being read to or being told a story provided that the stories were carefully selected and well told or read.

One of the greatest assets of a child is his imagination. If we are going to develop good interpretive readers, then we must never let anything interfere with this great gift. Fortunately, it exists in all children. If it does not, then some adult has killed it at a very early age. What a joy to the reader when his thoughts come from the page in color, when he gets the real feelings of the characters. We must constantly try to get readers to form their own reactions and not be forever telling them this is the way they should feel when they read. The true love of the beautiful has been stiffled more than once because of this approach. The truly effective interpretive reader must be accurate; he must have developed not only a critical reaction but a sensitive one. It has been said that the day is lost when we do not, for a few fleeting moments, indulge in a daydream or two. For these we can be thankful; at least they are our own. They have not been influenced by someone trying to tell us the exact purpose and mood of every detail. Why should we not observe some of these when we are attempting to develop effective interpretive readers?

The National Council of Teachers of English have given *us* several excellent suggestions in developing taste in literature (*6*). Reading in many ways can be compared to eating. Fortunately, we do not all like the same foods. A good connoisseur can, however, do much to make many foods more palatable but he cannot give us new taste buds. Why should we not take a few hints from this situation and apply the same philosophy in developing interpretive readers. We can guide, suggest, encourage, or maybe inspire. We can provide numerous experiences, both actual and vicarious; we can surround students with materials in both width and depth; in fact, we might even force them to read, but the full enjoyment and fulfillment will only come through complete involvement on the part of the reader. When this situation occurs, then, and only then, do we have interpretive readers.

We can teach literal reading; we can make an honest attempt to do the same with critical reading. We can plant the seeds of interpretive reading. We can furnish a healthy atmosphere, but then let us leave it alone and not in the hands of self-styled experts.

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Sequential Reading Skills at the College Level

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TEACHING reading skills at the college level is a difficult and challenging task, probably exceeding even the difficulty of teaching freshman composition to freshman engineering students. For although many freshman engineering students remain uninspired when confronted with English composition, it has, at any rate, the sanction of history, and perhaps even more important, it has the force of the inevitable. No matter where you study engineering you must take freshman composition in some form. And you always get credit for it. Teaching reading at the college level, however, has little sanction from history, students, or even faculty. It frequently is required but given no credit, and its teaching is frequently relegated (after initial introduction) to a staff member or graduate assistant who would prefer teaching literature, educational psychology, or a graduate course in the teaching of reading, if the choice were offered. Yet the development of advanced reading skills is probably more essential to a college education and later to an alert and responsible citizenry than composition skills, or indeed any other skills.

The heart of this problem of the difficulty in teaching reading skills at the college level appears to be a gross misunderstanding of the nature of the reading process. In short, the erroneous assumption that reading does not or should not need to be taught at the college level is the cause of many an unnecessary failure, and perhaps even more important, of many second-rate performances from potentially first-rate students, and of many frustrations among first-rate faculty whose courses require more mature reading skills than their students bring to their courses.

Why don't students enter college adequately prepared with the advanced reading skills needed to meet the various demands of collegiate work? One reason—perhaps the most important reason—is little or no instruction in reading at the high school level. And inadequate instruction, or the complete lack of it, in precollege training is caused largely by the erroneous notion that the reading skill needed for life can be taught in the elementary grades—not only can be, but should be. The truth of the matter, however, is that reading is not a skill or set of skills whose development is complete after six grades, or nine, or twelve, or ever, as Mortimer Adler has affirmed,[1] ". . . perfect reading lies at the end of the rainbow. Although practice makes perfect, in this art of reading as in any other, the long run needed to prove the maxim is longer than the allotted span." Surely, then, the very least formal education should furnish in its short span is specific provision for the continuous development of reading skills to each student's highest potential.

Providing college students with the means for the continuous sequential development of reading skills is not a simple task. It takes much more than the willingness or the desire of an institution to do so. First and foremost, it takes a dedicated and talented teacher with thorough training in the teaching of reading. But it takes more—it takes salesmanship. The college-level instructor in reading must be willing and able to convince his students of the prime importance of his offering here and now, to show them how it will enable them to meet their general academic needs with somewhat more effectiveness and ease. He must also educate his colleagues. College professors generally tend to lump all college-level reading instruction under one label, "Remedial," and they initially resent and resist any suggestion that they have a legitimate responsibility themselves for the development of some of their students' reading skills. But college professors, though noted for their individualism, are also reasonable human beings whose earnest desire is to communicate their subjects of investigation to their students. Unfortunately for many, the full realization of their course offerings is frequently frustrated by the lack of their students' full development of necessary reading skills. Helping our colleagues get a clearer understanding of the need for the continual development of higher level reading and study skills to enable their students, therefore, to take maximum advantage of their offerings, is a means of converting many a critic to support of a reading program.

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[1] Mortimer J. Adler, *How to Read a Book.* New York: Simon & Schuster, 1940, p. 10.

**Reading and Inquiry, IRA Proceedings, 10,* (1965), 39-42.

What are the skills needing sequential development at the college level? How can we best help students to mature in these skills? Let us consider the second question first, since it is probable that much secondary teaching misses its mark, not for lack of zeal, but rather for lack of understanding.

Reading teachers talk about the need for teaching comprehension and interpretation. Yet in one sense we cannot truly teach any college student to comprehend or to interpret. We can teach certain basic skills on which comprehension and interpretation rely in part. We cannot teach comprehension and interpretation because, as we all know, comprehension and interpretation are based on past as well as present experience, and the wider and deeper the past experience, the more background a reader has for making judgments, the better will be his comprehension and interpretation. It is the simple maxim, "The more you bring to a book the more you will take from it." Experience and the concepts that relate to it come slowly and cumulatively, and no amount of skills "teaching" can offset the lack of experience and of a breadth of vocabulary springing from experience.

Helping students mature in reading at the upper educational levels requires setting the stage for the reader to gain more insight into the process of getting meaning, a better understanding of his purpose, and a methodology for testing one interpretation over another. The stage cannot be set by simply lecturing, by telling the reader how he should proceed. You may lecture to a group of freshmen on the *Survey Q3R* until you are blue in the face without materially changing either their approach or their reading efficiency. Instead of building greater skill in reading the net result may be a greater resistance on the part of the students to any attempt to modify their ineffective approaches and a silent conviction that while the *SQ3R* may work well for the instructor, it is time-consuming, laborious, and useless for them.

Insight does not proceed from "being told." We cannot give anyone insight. We may perhaps guide students in their consideration of the reading process, so that they may come to their own conclusions regarding the usefulness of any given skill. Thereafter the instructor's chief function is to guide students, supplying them with stimulating graded materials whose use convinces them of the validity of the conclusions they had reached.

What then are the basic skills college students need to continue to develop in this continuous process of maturing reading ability and in what sequence can they best be taught? The skill we might consider first is vocabulary skill, since it affects both rate and comprehension. Yet of the development of vocabulary, I shall say very little. It is the one area on which there is common agreement about its importance and need, though in point of fact teaching it has proven surprisingly difficult—in some cases almost impossible. For while we can require students to memorize synonyms, as is done by some English and Reading instructors who parcel out regular lists of words to be learned, or while we can concentrate on roots and affixes, adding thereby to the students' natural distaste for vocabulary study, we cannot assure our students or ourselves of any marked increase in the growth of their concepts thereby. Concepts develop through experience—first-hand or vicarious—not through looking up a list of words in the dictionary.

The writer has tested students orally, using a college-level diagnostic vocabulary test that had first been administered silently, and found that the students had simply memorized synonyms. When the meaning of a word was asked, the student might give the correct answer, but when asked what his answer meant he could only give the original word. He had no concept for the word. The development of concepts is every instructor's job in every subject area. And until a concerted effort is made by all instructors to overcome their students' conceptual weaknesses, only limited progress can be made by the reading specialist alone.

Aside from skill in interpreting words, perhaps the most important reading asset is an effective over-all approach to the reading task. The reader needs first skill in getting an overview of the whole—in classifying the writing according to the author's purpose, central thesis, and its major design or architectural structure. Skill in classification or analysis requires of the reader an ability to make perceptive use of title, introduction, preface, table of contents, typographical headings, etc., as clues to purpose, organization and central theme. The second major skill area is that of interpreting what is read, of proceeding from the whole to parts, and of synthesis. The reader must note key words, follow verbal signals which tell him when the thought flows straight on, when it turns sharply, or when it signals a conclusion or summary. The reader must also understand and follow the author's pattern of thought, cultivating an awareness of the direction the author takes so that he may follow surely, grasping not only main ideas and supporting details, but tone and intent as well. Such skill may be developed most easily in the microcosm, that is, at the paragraph level, first before approaching the longer units of thought, the article, chapter, or book. Hence the study of paragraph structure, noting the author's use of such patterns as question-answer, conclusion-proof, opinion-reason, problem-solution, comparison-contrast, enumerative detail, prepare the reader to pursue longer passages with understanding.

Only after the reader has ascertained the author's purpose, understood the author's propositions, grasped his ideas and arguments, is he ready to evaluate or react critically to the reading. One of the biggest temptations of the unskilled college reader, or perhaps of any unskilled reader, is the temptation to conclusion jump — to skip the step of first understanding *what* the author says, before diagnosing, agreeing, or evaluating. Skill in evaluation, therefore, demands first and foremost an attitude of mind — a determination to withhold judgment until the reader has completed the job of analyzing and interpreting the material—to give the author the courtesy of hearing him through. In addition, it demands the willingness and the ability of the reader to differentiate between opinion and knowledge. As Francis Bacon (Essay: of Studies) advised, "Read not to contradict and confute, nor to believe and take for granted; nor to find talk and discourse; but to weigh and consider."

Criticism or evaluation itself demands of the reader the reasons for his judgments. These reasons may give evidence that the author is uninformed, misinformed, illogical, or incomplete in his account. Or reasons may be given for agreeing with the author.

Beyond criticism lies an appreciation of the significance of what has been read. After he has read, understood, and evaluated the material, the reader needs to see its significance for him and for society.

"It takes imaginative and intellectual work to read a book, and facility and achievement grow by exercise."[2]

LINGUISTIC ASPECTS

The nature of the language we use is a factor in comprehension. American English is characterized by the relative infrequency of inflectional endings of words, by the importance of word order—or "the flow of thought through a sentence"—and the word groupings within sentences in terms of clustering of words around key words. In other terms, linguistics is an important consideration in teaching children and youth to handle language as they seek to understand fully and well what they are reading.

Understanding in Reading from the Viewpoint of Sentence Psychology

DAVID GLIESSMAN*

A FIRST STEP in investigating anything complex is to cut it down to size — that is, to deal with its elements.

How a child understands what he reads on a page is such a complex thing! Even apart from the "higher processes" of evaluation and application, simply understanding a series of sentences is a high-level skill. Thorndike put it this way: We should not consider the reading of a text-book or reference as a mechanical, passive, undiscriminating task, on a totally different level from the task of evaluating or using what is read. . . . It is not a small or unworthy task to learn 'what the book says'." (17)

Dr. O. H. Mowrer (13) has made an exceedingly interesting attempt to reduce understanding to what might be its basic element. Essentially, he is interested in explaining how a sentence works — how it arouses meaning in the listener or reader. If we accept the notion that reading begins not with word recognition but with understanding sentences, then this theory provides an explanation for the basic step in the reading process itself. Dr. Mowrer calls it "sentence conditioning." To understand what he means we will first have to say a few things about the term *conditioning*, and how it applies to learning the meaning of words in reading. As we do this, we will gain a very important concept: viewing words as "signs" of real experiences.

Conditioning—and How Words in Reading Stimulate Meaning

I. *The meaning of spoken words:* Anyone who has taught children to read knows, in an informal way, how printed words begin to arouse meaning. The care with which we point to the new word on the blackboard as we pronounce it (or get the child to pronounce it) suggests that the meaning aroused by the *sound* of a word is the basis for understanding it in print. What happens psychologically in this everyday event?

The nature of "meaning" is very complex. Fortunately, only one of its aspects — its dependence on experience—is important for our purposes. A fortunate child might first hear the phrase, "We have *come home*," for

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[1] This article was prepared with the counsel of Dr. O. H. Mowrer, Research Professor of Psychology, University of Illinois.

The Reading Teacher, 13, (October 1959), 22-28.

example, spoken by parents he loves, in circumstances that make him feel secure, and in view of familiar physical objects (house, furnishings, etc.). Thereafter, when he hears the word "home" spoken (by himself as well as by others) he experiences many of the emotions and images that were part of the real-life situation. We say that the word *means* something to him. In addition, the phrase, "come home," will begin to mean something quite definite to him as he hears it used again and again.

The reader can demonstrate how meaning depends on experience by indulging in a little introspection with an infrequently used word. For example, hearing the word "flawless" reminds me of glass and complexions, but not of diamonds. My experience with any kind of diamonds (much less flawless ones) is rather barren. I know in an intellectual way that diamonds can be flawless, but the idea is not very exciting. The boyhood memory of distorting the images of passing cars by carefully viewing them through imperfections in the living room windows *is* exciting. So is the more recent memory of the soft feel and color of a baby's skin. For convenience, we might use the term "meaning response" to sum up all such emotions, images, and memories that are aroused by hearing a word.

There is, then, no meaning inherent in words. Spoken words and phrases only begin to *arouse meaning responses* as they are heard in direct experience. When they do so, in Professor Mowrer's words, they become signs of *real* experiences. The same words may *signify* different experiences for different children.

Experiences become organized and accessible for thoughtful activities such as reading when they are associated with the signs that we call words and phrases. Rich experiences pay off (in readiness for reading, for example) when talked about.

II. *How a printed word arouses meaning:* What happens psychologically, then, when the child hears a familiar word spoken as he looks at the same word on the blackboard or in his book? To the reader who remembers general psychology, the term "conditioning" will be familiar: it was used, for example, by John B. Watson to explain how a little boy named Albert learned to be afraid of a white rabbit because each time it was presented to him, a frightening noise was produced behind him (19). It can also explain how our child learns to attach the right meaning to the printed word "home" when the *sound* of the word already means something to him. Conditioning, then, is a way of explaining how learning occurs. The first important element is a stimulus that always produces a certain response. This might be called the unconditional stimulus. The loud noise will frighten Albert about as readily as the spoken word "home" will arouse a *meaning response* in our child. Both the loud sound and the sound of the word "home," then, are kinds of unconditional stimuli.

The second important element is a stimulus that originally does *not* produce this response — a "conditional stimulus." If such a stimulus (whether a rabbit, or the new printed word "home") is presented with the unconditional stimulus often enough, it will begin to arouse the same response.

Eventually the conditional stimulus alone will produce this response very regularly.

The purpose of reading instruction is to make printed words *significant.* To become *signs* of experience, they must arouse those elements of experience that we have called meaning responses. The most direct means of accomplishing this might seem to be associating the printed word with an object or experience, rather than with the sound of a word. This has been the rationale of the non-oral method (12). As Anderson and Dearborn (1) indicate, however, this approach loses sight of the fact that spoken words are a highly valuable and convenient source of meaning. To avoid the use of word sounds would be highly inefficient. The "sight" and phonetic methods of presenting new words both have the same immediate purpose: going to the sound of the word for its meaning. When we stress word analysis techniques in independent reading we try to get the child to do this habitually. Whatever approach he uses to figure out a new word, he must eventually *pronounce* it (even if only under his breath) to get its meaning. The sound of the word must, of course, be familiar—it must arouse a meaning response. We say that a poor oral vocabulary may be a handicap in reading and the research evidence bears us out (1, 5, 16).

Since children continually see new words, and since the conditioning process — or learning — may take a little time, we can expect children to move their lips and voice words a good deal as they read silently. Later on, when they become better readers —when more printed words regularly arouse meaning responses—we can expect them to become less dependent on saying words as they read (though they may continue to do so as an unfortunate habit). At this point, printed words can be described as signs.

Sentence Conditioning: How a Sentence Stimulates Meaning

Using what we have said this far, we can explain how the child understands the meaning of all the words and familiar phrases on a page; we have not, however, explained how he can understand the meaning of a sentence. Assume that our child knows the meaning of each word in the sentence, "Spot did not come home." Now, if the words in this sentence do not interact and modify one another in some way, our child does not understand the sentence. He can only give us isolated word meanings. We might just as well present the sentence to him in jumbled fashion: "Not Spot did come home." It would make little difference since his understanding of each word or familiar phrase is isolated. Obviously the separate word meanings in a sentence have to be gotten together in some way for meaning to result. Thorndike has put it well: "Understanding is 'thinking things together'." (18)

This problem has not been handled well in the psychology of reading. We can, for example, begin by saying that the sentence itself is a natural unit of meaning—a whole, or a complex stimulus that arouses a meaning response just as a word does. The words, then, are parts of a whole, and naturally related to one another. This is the "gestalt" position that has emphasized presenting words in sentences and stories (8, 20). Whether we can explain such a complex thing as understanding, however, by starting with a complex assumption is debatable. Our hope was that we could begin with elements — the meaning of words and phrases — and then explain how understanding develops from these. Starting from these elements we could say, as many writers have said (6, 7, 15), that the meanings of separate words are fused into chains of ideas, or that they are synthesized and organized. Such terms are excellent descriptions of the reading process. But it might be well to ask if any more basic psychological principles can explain just *how* this fusing or synthesizing or organizing takes place. Professor Mowrer feels that such a principle exists: the concept of conditioning.

The Process of Sentence Conditioning

Even the most simple sentence, he reminds us, always consists of two parts or *signs:* a subject and a predicate. We might, as a matter of fact, consider the achievement of combining these two signs into a simple sentence as the beginning of communication in man's history. With this accomplishment, human beings could communicate about something beyond their immediate surroundings. The predicate is the active element in the sentence. It adds to the subject, or modifies it, or describes it in some way. In short, the predicate does something to change the reader's response to the subject, just as the unconditional stimulus (a loud noise) changed Albert's reaction to the conditional stimulus (a rabbit). The predicate is, then, a kind of unconditional stimulus, while the subject serves as a conditional stimulus. When these two parts are close together, as they are in a simple sentence, all of the necessary elements are present for conditioning to occur.

Now our child who reads "Spot did not come home" knows something new about the dog; if the sentence has really performed its conditioning function, the meaning response aroused by Spot should be modified. Suppose that in an ensuing class discussion the question of Spot's dependability comes up. If our child has really understood this simple sentence, he might want to suggest that Spot could benefit from additional training. This is because the modified meaning response to the printed word "Spot" generalizes to the sound of the word. It will generalize to the real Spot, too. Our child's understanding of "home" also will be modified. Now it is a home without a dog. This modification of a part of the unconditional stimulus did not occur in the conditioning of Albert.

General Meaning of Sentence Conditioning

This, in somewhat abbreviated form, is Dr. Mowrer's concept of sentence conditioning. We might try to state what it means in a more general way. Dr. Mowrer believes that sentences do not transmit meaning to the reader. There is no meaning inherent in sentences that can be "sponged up," and that is the same for all readers. What happens is that meanings already possessed by the reader are aroused by individual words and phrases; but they are aroused in new combinations so that new general meanings result. In Dr. Mowrer's words, "One person, by the use of appropriate words or other signs, can *arouse,* 'or call up,' particular meanings in the mind of another person; but he does not transfer or implant them there. The communicative act . . . lies rather in the combination, juxtaposition, or association of the meanings thus aroused *in novel,'informative' ways."* (13) One implication of this view is evident immediately: the amount and quality of understanding will always vary from one reader to another. It will always be, as Gates says, "partial, incomplete, and highly personal in character." (3)

The position was taken at the beginning of this paper, followed from Mowrer, Thorndike, and others (6, 9), that simply understanding a series of sentences is an active process that requires a high level of skill. Perhaps, in the light of Dr. Mowrer's theory, this view is more meaningful. Even a simple sentence can be an original learning experience for a child. When a sentence is more complex or when several sentences are put together, Dr. Mowrer has used the term "searching" to describe what takes place in reading. We will want to use this term in indicating some implications of this theory. In our sample sentence, "Spot did not come home," the subject and predicate were conveniently close together. "Conveniently," because they must be for conditioning to occur (remember that the loud sound came with the rabbit present). This does not always occur even in a first reader. Suppose, for example, that a modifying phrase separates the subject and predicate: "Spot, who has usually been so faithful, did not come home." Or suppose that a pronoun is used as the subject: "Spot is our faithful dog. But this time, he did not come home." Now it is up to the child to "get the subject and predicate together." In other words, while he looks at the predicate, he must mentally search for and think about the subject, or vice versa. This obviously makes some increased demands on the reader.

Some Implications

Hollingworth (9) once wrote that it was meaningless to talk about reading as a vague whole. For him, any account of reading that would lead to helpful ideas had to deal with word pronunciation or the response to a word or some other *element* of reading as a whole. Sentence conditioning is such an element. Further, it deals with the very basic element of understanding sentences. This is why it is an important contribution to the psychology of reading. In case that brands it as "theoretically interesting," let us test the Mowrer theory. As we do so, we should underline that it is a *theory*. Our test, of course, will not be to *prove* the theory, but to see if the theory helps us to think more clearly about reading.

Plainly, the concept of sentence conditioning makes the problem of understanding a much more manageable one. For example, we often ask ourselves, "Why is it that John, a poor reader, does not understand or remember what he reads?" We are not asking how he became a poor reader; we are asking what might presently be responsible for his failure to *get the meaning*. When we ask the question in this way, it is often difficult to get good answers, largely because we may not be altogether sure what *getting the meaning* involves. Instead we might ask, "What are some of the things that can interfere with sentence conditioning, especially with the 'searching' that is involved in getting the subject and predicate together?"

We might reason that some students (particularly beginning with the upper grades) will have failed to develop the *habit* of *searching within* the material they read for subjects that are referred to by pronouns, for predicates that have modified certain subjects, etc. My personal conviction, from rather extensive experience with college and adult readers, is that this habitual failure to actively search *back into the material* for all pertinent points is an important cause of poor comprehension. Such readers might be described as passive. Such a passive approach certainly does not appear full-blown when a student enters high school; its roots can probably be found somewhere in the intermediate grades.

A child must know where he is likely to find the predicate in a complex sentence; and he must recognize it when he sees it. To do this with any efficiency, he must know something about the ways in which sentences are formed and organized. That poor readers often do not have this sentence sense has been demonstrated (4, 10). Training in general oral language usage has been found to improve reading performance (11, 20). The modern tendency to treat reading as a part of general language development is highly appropriate.

The extent of emotional disturbance among poor readers is still debated, though there is some evidence to indicate that it is fairly great. (2). Whatever the general picture, it is obvious that either temporary or persistent worries can interfere with understanding in individual cases. Perhaps a good way to describe such a child, as far as the act of reading is concerned, is to say that he is distracted. Most of us have had the experience of reading a page or so only to discover that our mind has been on some extraneous thought. Not concentrating while reading is easy because reading is an active process. Thinking about the meaning of a subject or predicate, or searching back mentally for a subject while looking at a predicate both require some effort and self-control — processes that, in an activity such as reading, may be difficult for children. When additional effort is required to overcome pressing worries and fears, a disturbed child may just give up and think about the worries and fears. He is distracted.

Physical fatigue can make anyone more easily distracted, often by thoughts that would not concern him in a more normal state.

Rather recently, we have been reminded again of the importance of good oral reading, after a period in which practicing this skill was sometimes regarded as somewhat primitive. In light of the theory of sentence conditioning, this is a very fortunate re-emphasis. Improper phrasing, lack of respect for punctuation, and word by word reading seem very likely to interfere with sentence conditioning. For example, the child who reads our sample sentence, "Spot . . . did . . . not . . . come . . . home," or "Spot did . . . not come home," does not get the subject and predicate together as he should. Evidence indicates that poor readers are often deficient in oral reading, especially in these aspects of it (1, 14). Such poor habits, as they are reflected in oral reading, may be merely *symptoms* of a failure to understand in the first place. From the viewpoint of sentence conditioning, however, it seems equally reasonable to suggest that such poor habits (when uncorrected in oral reading) are *causes* of poor comprehension.

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Flow of Thought Through an English Sentence

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IF READING is concerned with meaning, we must consider how English sentences deliver meaning. We are not teaching reading in the abstract but reading in English. We must attend, therefore, to the structures which convey meaning in English sentences and to the kinds of meaning they convey.

To go this far and no farther would leave us deep in linguistics with no path to the field of reading instruction. We must, therefore, consider the problems created for the *reader* by English sentence structures. It is the purpose of this paper to point out a few of these problems in the hope that other people may be interested in extending the analysis. These "others" need not be scholars; they may be classroom teachers who are sensitive to the language and thoughtful about it.

The traditional grammar on which we were nourished is not very helpful, but for that matter neither are most of the modern linguistic analyses. What we need is a fresh, simple view of English structures as they affect the practice of reading.

Let us begin with the fact that, in English, meaning is conveyed through groups of words working together. It is not conveyed one word at a time additively. Take, for example, a noun phrase consisting of a noun preceded by modifiers and determiners: the little white house.

The reader cannot be sure of my meaning until he comes to the word *house*. At this point he finds completion or closure and a unit meaning is established:

the . . .
the little . . .
the little white . . .
the little white house.

To see what is involved here, suppose the phrase had been *the little white pebble*. The meaning of *little* would be quite different since *little* in terms of *pebbles* is quite different from *little* in terms of *houses*. Similarly, *white* is one thing in terms of pebbles and another in terms of houses. It is clear that the reader can assign meaning to the words in a phrase only when he comes to its close. He must, therefore, hold meaning in abeyance.

There is an interesting reinforcement to this view in the physical act of perception. Photographic studies show that the length of eye span in reading across a line of print is somewhat less than had once been supposed. We see relatively few characters in any one focus on a line of type before jumping to the next span of characters. The group of characters we perceive in any one focus is not necessarily a word group. In fact, a single focus may land us in the middle of a long word. Our eyes move across a line of print in jumps and pauses quite independent of meaning. This fact has led some observers to remark that meaning is acquired during the period when the eyes are moving. I would prefer to say that meaning is held in abeyance during the physical acts of eye movement.

What is true in the reading of a single-word group is true of the whole sentence. It is common sense that the reader must keep the beginning of a sentence in mind to the end of the sentence—a simple act of memory.

Far more than memory is required of the reader, however. He must hold meaning in abeyance until the end of the sentence. Two major factors of English account for this necessity. The first is semantic; the second is structural. First, most words in English have more than one meaning. Many words have a great variety of meanings, sometimes with no obvious relationship among them. Which particular meaning of the opening words

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Vistas in Reading, IRA Proceedings, 11, Part 1, (1966), 322-326.

of a sentence is pertinent depends upon the context of the entire sentence. It is only at the end of the sentence that the reader can fix the meanings of the individual words.

Of course, this generalization must not be pushed too far. There are many short, simple sentences in which the referent of each word is clear in itself or is made clear by context. Depending upon the nature of the game in *Tom hit the ball,* we would know who Tom is, what kind of a ball he hit, and whether he struck it with his hand, his head, his foot, or his bat or racket. However, in normal informative written discourse, the generalization holds.

The second factor requiring the reader to hold meaning in abeyance is the variety of English sentence structure. The word groups which compose English sentences may be related to each other in four ways. There are the subject-predicate relationship, the co-ordinate relationship, and the relationships of complement and modifier.

The reader's structural problem is to determine the word groups and then to see how these groups relate to one another. Until he has done this distinguishing, he must hold the meaning of the sentence in abeyance.

A prime example of the effect of word groups upon one another occurs with sentence modifiers; that is, words or word groups whose meaning applies to the whole of a sentence. To pinpoint this kind of modifier, consider the following sentences comprised of the same words:

> Happily, he died.
> He died happily.

In the first sentence, the writer is commenting on the fortuitous fact of a man's death. The word *happily* applies to all the words that follow. In the second sentence, the writer is commenting on the manner of the man's death. The word *happily* applies only to the one word immediately preceding.

In general we may say that any introductory adverb modifier—word, phrase, or clause—modifies the rest of the sentence. The reader must, therefore, spread its meaning across all the words that follow. This point is an example of holding meaning in abeyance to meet structural requirements.

Another prime example occurs with an introductory participial phrase. Consider the following sentence:

> Holding to the ledge with one hand, the climber tried to free the rope with the other.

The entire participial phrase applies to, or modifies the first following noun, the word *climber.* It may well be argued that the introductory phrase applies to all the rest of the sentence. We may see this relationship more clearly if we transpose the sentence as follows:

> The climber held to the ledge with one hand and tried to free the rope with the other.

Here the coordinate-verb structure requires the reader to hold the meaning of *climber* in abeyance until the second verb *tried* appears Or if you prefer, it requires him to insert the meaning of *climber* before the word *tried.*

Either way you look at it, the effect of deferral or abeyance is in evidence. Now, how does all of this happen? And if it does, how does anyone but a genius ever learn to read? Fortunately, the speed of electro-chemical nerve impulses through the brain is very high—something like 10 miles per second. When the end of a sentence is reached, the reader's built-in brain computer sorts out the relationships of the word groups and selects the particular meanings which the context requires. To borrow from computer language, all of this sorting and selection may take place on a shared-time basis; that is, with particular tasks being solved on an apparently simultaneous basis. Unless ambiguity has arisen, the reader moves to the next sentence with no apparent pause.

All goes well if there is no ambiguity, but unfortunately English is often unavoidably ambiguous both because of variant word meanings and because of structure. Even without ambiguity, difficulties in structure create reading problems. It is my belief that an understanding of how these structures deliver meaning will greatly assist students in becoming mature readers.

I should like to turn now to the English sentences. I am using the words *kind of meaning* in a special sense. I use them to refer to two broad divisions which will be familiar to you from traditional grammar. For purposes of reading instruction, we may group statements as to whether they report action or attribution. Either they report action or they attribute identity, characteristics, or description to the grammatical subject. The reader who is aware of this distinction has an important tool at his command for sorting out meanings.

This extent is as far as we can go with the traditional grammar in this analysis. It will become clear that many so-called action verbs do not in fact report action at all. Indeed, it is my suggestion that action is reported only by the past tenses of a limited class of verbs and not even by all verbs in this class.

It will be useful to place this analysis of kinds of meanings in a particular framework. The framework is the direction in which thought flows through an English sentence. We tend intuitively to suppose that thought flows constantly and continuously from left to right—the direction in which words are laid down by writers and printers of English. There is nothing in the nature of human intelligence that requires this order. Hebrew, Arabic, and other languages are written and printed in other directions. Yet because we read and write from left to right in English sentences, we tend to suppose that this directional pattern is inherent in the language.

It is important to understand that in a great many English sentences the flow of thought is not simply left to right but is in fact circular. It is important, for one thing, because of the emphasis on rate of reading that persists not only in schools but in adult reading clinics as well. Let me make this one further distinction. In mature reading the eyes proceed steadily from left to right except for conscious regressions, but the mind does not. This difference is possible again because of the difference between the very high speed of the brain and the relatively low speed of eye muscles.

The prototype of the action sentence is *Tom hit the ball*. The meaning flows or accumulates from left to right. The word *hit* is a so-called action verb in the past tense.

The prototype of the attributive sentence is *Tom is the president.* The verb is a form of *be* and is called a linking verb. Note that the words following the verb refer to the word preceding the verb. The flow of thought is from left to right and back leftwards to the start of the sentence. It is in effect circular. This same phenomenon occurs with all linking verbs such as *look, remain, stay, sound* and with *get* and *keep* when used in certain senses. The meaning delivered in all these sentences is identification, characterization, or description. Or to use our general term, it is attributive.

Now notice an interesting thing. The same effect occurs whenever a form of *be* appears in a verb phrase. It occurs in the progressive tense forms:

> Tom *was hurrying.*
> The birds *are singing.*

It also occurs in the passive verb form:

> The house *is sold.*
> The quarterback *was injured.*
> The car *had been wrecked.*

In all of these instances, the form of *be* seems to turn the flow of thought back to the beginning of the sentence. The meaning is not one of action but of attribution.

The verb *have* is a troublesome one for linguists. When used alone it is classed with verbs like *hit,* as a so-called action verb. Yet it never refers to an action even in the past tense.

Eve *had* a cold.

The Senator *has had* a change of heart.

These are not reports of action. They are static, descriptive statements.

In a similar way, it can be shown that the present-tense forms of so-called action verbs do not report action but are essentially static and descriptive: *Ice melts. The dogs bark at night.*

Most interesting, perhaps, is the effect of those auxiliary verbs that are called modals. These are the words *can, must, should, dare,* and the like. They always appear with the base form of the verb. Their function is to indicate an attitude, a mood, or a potential. They do not report action but the potential for action. They are genuinely attributive.

The bus *should arrive* at any moment.

Jack *can play* the drums.

What I have been leading up to is this: in our grammatical study of English, we make too much of action. From the standpoint of meaning, action is reported in only a limited number of sentences. In a far greater number, the report is one of description or identification. The meaning is attributive.

I suggest that the traditional grammar analysis is not useful in teaching because it over-emphasizes the element of action. It tends therefore to over-emphasize the accumulation of meaning in a straight left-to-right direction. This pattern of delivering meaning occurs only in the relatively small number of sentences that really do report action. In the far greater number of sentences, meaning is attributive and is delivered in a circular manner.

We do a disservice to children when we transfer the traditional grammar analysis to reading, even when the transfer is merely implicit. We give the child a mental set that does not accord with the reality of his future reading experience. It is of course quite possible to teach reading without any reference whatever to the structure of English sentences and the means by which they deliver meaning. But it seems self-evident that an elementary understanding of what is happening in a sentence will enable a reader to deal with it more efficiently.

What are the practical considerations? What can be done to help the child who is learning to read? We would do well at this point to consider how a mature reader operates, for his methods are the goals of reading instruction. To restate more simply, the goal of reading instruction is to produce mature readers.

It would be neither appropriate nor useful to attempt a complete definition of the mature reader. What we are concerned with here are the strategies he uses to deal with the patterns and structures by which sentences deliver meaning: (1) The mature reader does not expect to read continuously at the same rate. (2) He expects to halt on occasion, to retrace a sentence in his mind, or to reread it. (3) He holds meaning in abeyance until he reaches the end of a sentence. (4) He is alert to cues which distinguish action and attribution. (5) When attribution occurs, he follows the circular pattern in which meaning is presented.

This time is not a proper occasion for laying down a list of specific teaching devices. The most than can be done is to call attention to the general principle that meaning accumulates in a straight left-to-right direction only in action sentences and that meaning is delivered in a circular manner in non-action sentences. The obvious practical step is to call attention of teachers and children to this distinction. The most helpful clues are the verbs and modals as described above; that is, the verb *be* and the verb *have* used alone, and the modals such as *can, could, might,* indicate attribution and make the flow of thought circular.

This understanding of English sentences might conceivably place a powerful tool in the hands of readers. Properly reinforced in the classroom, it could lead children to the goal of mature reading. I believe it is worth serious consideration. But it is only a beginning. Much more lies beyond, for the mature reader must be sharply aware of the basic structures of the sentence and of how they are related to one another.

Better Reading Through the Recognition of Grammar Relationships

ROBERT L. ALLEN*

A new approach to grammar, sector analysis, helps students understand sentence units and their relationships. Understanding sentence units is indispensable to intelligent reading.

ONE OF THE FIRST stages in a child's reading—if not *the* first stage—is that of recognizing and pronouncing words. The child may pronounce a given word aloud as a result of recognizing it as a whole, as a word he already knows; or, if it is regularly spelled, he may pronounce it aloud as a result of having learned to pronounce orally the combination of sounds represented by this particular spelling pattern (and he may not even recognize the word until after he has pronounced it). In either case, however, it is probably safe to say that at this stage he reads largely *by words.*

But the mere recognition of words is not reading. Reading is finding out what sentences say. For this reason, most first grade readers introduce words not as individual items but as parts of sentences. In the introductory stages these sentences are usually simple and short, of the kind the child might say himself—sentences like "Fluffy is a cat" or "Fluffy has three little black kittens." Even if the child reads each sentence word by word rather than as a total unit, it is still likely that he will be able to grasp the meaning of the whole sentence if he knows the individual words. But this kind of word recognition will not enable the child to understand more complicated sentences. To be able to read longer sentences intelligently, he must be able to recognize (either consciously or unconsciously) the grammatical positions that the different words occupy. That is to say, he must be able to recognize the structure (or grammar) of such sentences.

There is little difficulty in recognizing the structure of sentences like "Fluffy is a cat" and "Fluffy has three little kittens." Perhaps the most important grammatical relationship in an English sentence is that between the subject and its predicate, and in each of these two sentences the subject is a single word. English-speaking children seldom have difficulty with sentences like these since, as native speakers, they already know the different kinds of grammatical relations that can hold between subjects and their predicates; we do not need to teach these to them. But all the sentences our children have encountered before beginning to read have been *spoken* sentences, and the subjects in such sentences have consisted for the most part of single words or of fairly simple constructions. And even when long, complex subjects have occurred in the sentences they have heard, such subjects have usually been marked off from their predicates by junctures or other intonational signals.

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* *The Reading Teacher, 18,* (December 1964), 194-198.

Junctures, however, are not represented on the printed page. As long as a child is asked to read only sentences with single-word subjects and objects, he will probably have little difficulty: the *spaces* preceding and following the subject words and object words help to mark them off from the rest of the sentence. But unfortunately, written English does not make use of similarly unambiguous signals to mark off units larger than words (except sentences and certain kinds of clauses and parenthetical expressions). And yet the recognition of the boundary lines between the sentence-units in a sentence—that is, between the units occurring *on the sentence level*—is essential to the recognition of the structure of that sentence.

An example may help to show why the recognition of such boundary lines is so important. (This example also shows how poorly traditional grammar prepares us to recognize the really important units in sentence structure.) Most English teachers whom I have asked to pick out the prepositional phrases in the following three sentences have marked each sentence as containing two phrases—in each case, the two phrases enclosed between parentheses:

> I put your book (on the table) (beside your hat).
>
> I put your book (on the table) (in the hall).
>
> I took the book (on the table) (in the hall).

But if this analysis were correct, the structure of all three sentences would be the same. Actually, however, the three sentences differ fundamentally in their internal structure, and the differences are of crucial importance for the proper reading of the sentences. The first sentence, for example, contains five sentence-units, of which two *are* prepositional phrases:

> I / put / your book / on the table / beside your hat.

But the second sentence contains only four sentence-units and only one prepositional phrase *on the sentence level*:

> I / put / your book / on the table in the hall.

The third sentence contains only three sentence-units, none of which is a prepositional phrase:

> I / took / the book on the table in the hall.

In the second sentence, the phrase *in the hall* is part of the larger phrase *on the table in the hall;* in the third sentence, the phrase *in the hall* is part of the larger phrase *on the table in the hall,* which in turn is part of the noun-cluster *the book on the table in the hall.* The phrases in the last sentence are not sentence-units; they function on levels lower than the sentence level. A good reader must be able to distinguish between sentence-units and lower-level units.

I have already suggested that one of the most important boundary lines in a sentence is the boundary between the subject and the predicate. Unfortunately, however, this boundary is marked no differently from the boundary between any two words. I have felt for a long time that small children just beginning to read might be greatly helped by printed materials in which the boundaries between sentence-units were marked with longer spaces than the spaces used for separating words. Eventually the spaces between sentence-units could be gradually shortened until they were of the same size as other spaces; by that time, hopefully, the children using such materials would be able to recognize the boundaries between sentence-units on the basis of syntactic signals, as every good reader must. The ability to comprehend a complicated sentence and to read it intelligently depends upon the reader's ability to analyze its syntactic structure accurately.

There is a real need, therefore, for some instrument by which we can teach our students to recognize the borders between syntactic units, especially those on the sentence level. Such an instrument must be based upon a sound linguistic analysis of English structure rather than upon the mythology of traditional grammar. In addition, however, it must be a practical instrument, one that can be easily taught (and easily learned). It must be applicable to the structure of *written* rather than of spoken sentences. And above all, it must make use of the knowledge our students already have of the structure of their language. For example, they already know all the different possible relationships that can hold between a subject and its predicate, although their experience of subjects may until now have been limited to only simple, short subjects. Teaching them what a subject "is" or "does" would therefore be a waste of time, but we must be able to show them how to identify even a very complicated subject, of a kind, perhaps, that they have never yet encountered. They can then carry over their "feeling" for the grammatical relation of subject to predicate to this new, more complicated subject and predicate.

The feeling that all native speakers of English, including small children, have for the difference between subjects and predicates is probably related to the difference between the nominal (and adjectival) kind of material that usually turns up in subjects and the verbal kind of material that usually introduces predicates. As long as sentences are of the type "That funny old man likes cats," or even "That funny old man in the house across the street likes cats,' a child may have little difficulty in "accumulating" the whole subject in his memory storage until he comes upon verbal material (that is, the word *likes*). But when the subject itself includes verbal material, most children probably find it much more difficult to grasp the structure of the sentence without special assistance or training. For example, a child who has "stored up" the words *that funny old man,* to be related as subject to verbal material that will turn up later, may "release" this stored up subject at the first occurrence of any verbal material and thus assume (unconsciously) that *that funny old man* is the subject of *lives in the house across the street* in a sentence like the following:

> *That funny old man* who *lives in the house across the street* likes cats.

When such a student finally reaches the words *likes cats* in his reading of the sentence, he finds that he has words "left over." A good reader, of course, would go back and re-analyze the sentence; but many poor readers probably stumble right on, never really understanding why so many sentences seem to have ragged endings.

Another kind of subject that is likely to cause many children difficulty in their reading is a subject containing participles, and yet the use of so-called participial phrases is one of the distinctive features of formal written English as opposed to informal English (which makes more use of clauses strung along one after the other in linear sequence). Thus a child might take the words *that girl* to be the subject of *is* and the verb-like word *writing* (or rather, of the predicate-like word group *is . . . writing a letter*) in the following question:

> *Is that girl writing a letter* your sister?

The child would then assume that he was expected to answer a question about what the girl was doing rather than about her identity, even though here again there would be some words (the words *your sister*) "left over."

A New Kind of Grammar Needed

What is needed, then, is a type of English grammar which can be taught fairly easily in the lower grades, one which will help students to recognize the sentence-units in the more complicated sentences they are destined to meet in their later reading. Above all, such a grammar must *not* be a grammar that emphasizes words. It must be a grammar that teaches students to regard a sentence as a hierarchy of constructions within constructions, on different levels, rather than as a string of words in linear sequence.

Unfortunately almost all the grammars now available emphasize words rather than larger constructions. Most traditional grammars devote a great deal of space to a discussion of "the parts of speech," although the parts of speech are probably among the least important aspects of English structure. Even in the newer, linguistically oriented grammars, one usually finds the description of different kinds of words preceding the description of different kinds of constructions.

But at Teachers College, Columbia University, we have been working on a different approach to English grammar, an approach that emphasizes *positions*, especially the positions on the sentence level. These positions we call "sectors": our kind of grammatical analysis we call "sector analysis." After identifying the sectors, we examine the different positions *within* various constructions, on lower levels. We turn to the analysis of the parts of speech last—if at all.

The primary emphasis throughout is on the sectors. We feel that the ability to identify the sectors in a sentence will more than anything else help a child to recognize the sentence structure and thus to read it intelligently. We also believe that students can learn to *write* more effectively by gaining a recognition of the different kinds of sentence-units and of the different positions which they may occupy, added to practice in making up such units and in manipulating them, in shifting them around.

Sector analysis is surprisingly easy to teach in its initial stages, since it is based as far as possible upon the feeling students already have for English as native speakers of the language. This kind of grammar is already being used with fourth graders as well as with ninth graders. Space does not permit more than a brief introduction to sector analysis, but one or two examples may at least suggest some of the procedures followed.* We first give our students a list of the words we call "X words," and tell them that they are so called because they occupy the "X positions," of which there are two in every sentence. By changing a sentence to a Yes-No question, and then changing it to an emphatic (or even a negative) sentence, they can easily find the two X positions. All the words occurring between the two X positions can then be identified as the subject of the sentence:†

X		X	
	The man who lives in the house across the street		likes cats.
Does	the man who lives in the house across the street		like cats?
	The man who lives in the house across the street	does	like cats.

X	SUBJECT	X	
	The man who lives in the house across the street		likes cats.

Sector analysis promises to be an effective way of teaching students to recognize the most important units in a sentence—those on the sentence level. And there is already some evidence to suggest that the ability to recognize sentence-units and the relationships between such units may help students to become better readers.

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*A detailed description of this kind of analysis is to be found in Robert L. Allen, *English Grammars and English Grammar,* to be published shortly by the Macmillan Company.

†There is one possible exception to this "rule." Certain "middle adverbs" like *still* and *really* may shift from their usual position following the second X position to a position preceding that X position, as in *I really have finished my work.* (Cf. *I have really finished my work.*)

Some Notes on Syntax and Meaning

Certain aspects of the relationship between syntax and the communication of meaning, with some examples of the ways in which meaning results from syntax.

SUMNER IVES*

ALTHOUGH a general background for this discussion is given elsewhere in this issue, and although it is written as a kind of supplement to the following one by Professor Allen, I wish to make three basic assumptions more explicit. The first is that the primary operation in reading is dual in nature. A person interprets a sequence of graphic marks as a sequence of linguistic symbols and then derives meaning from the linguistic symbols. Experienced readers perform this dual operation below their threshold of attention and may not realize that they are doing two things rather than one. Methods of teaching reading usually separate these acts and deal chiefly with the first, assuming, at least in the early stages of instruction, that the second requires little specific attention.

The second assumption is that any successful method of teaching reading is necessarily a linguistic method, for its purpose is to teach the comprehension of linguistic material. It must adopt some views about the nature and details of this material. Current methods differ, however, in the linguistic views which they assume; some are based on the traditional content of the language arts program, while others select details from more recent linguistic scholarships. Persons developing methods are, or should be, guided by considerations of accuracy and of strategy. In principle, the field of language study is responsible for accuracy and that of reading instruction is responsible for strategy.

The third assumption is that the total language arts program, from kindergarten through twelfth grade, should be more positively integrated than it now ordinarily is. In this view, reading should not be an independent subject but one of the initial stages of a subject which includes language and literature in its later stages. In this more closely integrated subject, students will move in easy steps from simple recognition of linguistic symbols to increasingly full understanding of both the means and the content of linguistic expression. In effect, "language" will begin with "reading" and "literature" will include "reading." This third assumption implies, I think, that all statements about the language should be generalizations drawn from the reading materials or verifiable by reference to them.

In developing the topic assigned

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*The Reading Teacher, 15, (December 1961) 179-183, 222.

to me, I shall discuss the language as a medium of communication, presenting some details of its grammatical system as means contributing to the expression of meaning. Many of these details can be used, even before any systematic study of grammar is begun, provided they are introduced as aids to comprehension rather than as fragments of a structural system. I leave the strategy of introducing such details to those who know more about elementary education than I do, but I do not believe that previous results with the traditional description are determinative.

Languages operate with at least three (possibly four) essentially different kinds of units, although, in a few instances, these kinds may overlap in a single item. These are: the significant distinctions in sounds—phonemes, the minimum units related to components of meaning—morphemes, and the relatively independent patterns of morphemes which appear in actual utterances—sentences. (The fourth kind appears when one regards such patterns as consisting of, or derived from, one or more "kernels," these kernels being the fourth kind.) Note that the "simple sentence" and the "complex sentence" of traditional grammar are "relatively independent patterns of morphemes" and that a "compound sentence" includes two or more such patterns.

To understand a sentence, one must comprehend its linguistic ingredients — morphemes, words, phrases, clauses—their boundaries, their meanings (grammatical, lexical, or both), and their relationships to each other as constituents of larger units, up to and including the sentence itself. Each sentence constitutes a structural (grammatical) matrix consisting of one or more structural layers. In principle, each constituent derives one or more components of meaning from this matrix and forms part of the matrix contributing components of meaning to other constituents. For example, "dogs run fast" contains three words in an order which gives certain information about their meanings and relationships to each other. Each of these words could be given a different component of meaning by a difference in the context. The first (*dogs*) would be an object rather than a subject in "boys like dogs." The second (*run*) would be a noun in "scored a run." The third (*fast*) would be an adjective in "a fast train."

A method of teaching reading which stops with recognition of words is relying on the pupils to assemble the matrix from the words and to understand the contribution it makes to the meanings and relationships of the words. It assumes that the pupils have acquired the ability to supply the proper grammatical components of meaning as they have learned to speak the language. When children are already fluent speakers of English and are familiar with the standard usages, word recognition may be enough. Bright children from literate families will probably learn to read when taught by any method. Something more than word recognition is indicated, I think, when children are deficient in their linguistic development, when they progress to written material which is structurally different from conversational English, and when serious attempts are made to build a properly integrated and cumulative language arts program.

The grammatical system of English can be divided into morphology (matters of word formation) and syntax (matters of word arrangement), but these kinds of structure combine in mutual support to express meanings. Although there are exceptions, one must expect the grammatical meanings in a given instance to result from a union of morphological and syntactic signals. For example, only nouns and verbs take an inflection often spelled with *-s*, but both nouns and verbs take such an inflection. The formal distinction between *runs* as a noun and *runs* as a verb is syntactic, and a distinction in arrangement must be recognized before a distinction in meaning can be perceived. Inflectable nouns and inflectable adjectives are not inflected in the same way, but an adjective having an appropriate lexical meaning can be given a nominal meaning and function by syntax, e.g., "the best is none too good."

Linguistic signals necessarily appear in linear sequence, except for intonation, which accompanies other signals. The expression of grammatical meanings can be additive, but it may also be aggregational—elements are accumulated until a configuration or Gestalt is assembled. During the accumulation, the elements appearing in linear sequence are held in a kind of mental suspension pending the completion of the unit. For example, "turn the paper in." The final word is not a preposition but part of the verb (Hook's merged verb). Grammatical elements also may be grouped in sets, each set operating as a unit. For instance, in "he was praised for what he did," the dependent clause is the object of the preposition. The prepositional phrase thus contains a subject and verb combination, a possibility that is in conflict with the distinction between phrase and clause given in most current textbooks. In deriving the meaning of an English sentence, one must assume that it includes such units—structural patterns operating as single linguistic forms in larger structural patterns. Structural patterns on any level may be additive or aggregational and may be continuous or discontinuous ("turn . . . in" is a discontinuous unit).

These facts, and others, require that a description of English syntax be complicated if it is to be accurate and comprehensive. Some linguists achieve an appearance of simplicity by stopping short of serious problems; some others achieve a high degree of comprehensiveness and accuracy but use a very complex or difficult procedure to do so. The usual textbook description just ignores the real nature of the problem. All current descriptive procedures, when applied pedagogically, now lean heavily on the intuition of the native speaker at some vital stage, omit some important parts of the system, or do not effectively relate the formal details of the system to meanings, functions, and relationships. All these procedures have value—some more than others, of course—when used with discretion, but it is too early to establish a new orthodoxy.. Despite this situation, many details of English grammatical structure are known, and I shall review some of these in the remainder of this article. These are presented as details, however, and not as parts of a more comprehensive analysis. I shall not present definitions and do not suggest that definitions be used with beginning students. But occasionally pointing out syntactic distinctions in a reading class can, it seems likely, help comprehension and serve as preparation for more systematic teaching of the grammatical system.

Even causal attention to English in action shows that many identical word forms convey different kinds of meaning and that the immediate kind of meaning is indicated, in part, by the context. The use of *runs* as either noun or verb has already been mentioned, and there are hundreds of word forms with similar dual uses. Now compare "a room" and "enough room." In the first, the noun has countable meaning. In this meaning, it could be modified by *many* or *few*. In the second, the noun has noncountable meaning and would be modified by *much* or *less*. Distinctions in meaning may also be given to identical verb forms, e.g., "the boy grew fast," "the boy grew tall," and "the boy grew roses." In the first, the meaning of *grew* is intransitive; in the second it is linking; and in the third it is transitive.

There are, of course, word forms and prepositional phrases which may be adjectival or adverbial, depending on their positions. There are also many word forms which may be prepositions ("went up the stairs"), adverbs ("went up later"), or parts of verbs ("put up on the book"). And there are a few word forms that are qualifiers when followed by an adjective or adverb ("pretty weak" and "pretty soon") and adjectives when followed by a noun ("pretty scene"). In fact, determination of class membership by position (some would say "functional shift") is inherent in a great many common words.

A few verbs which are often used as main verbs may introduce a verb phrase and convey a special meaning in doing this. Compare the two clauses in each of the following sentences.

He *used* to live in Iowa but now he lives in Ohio.
He *has* to drive carefully when he drives his mother.
He *kept* washing until he washed it clean.

The most interesting of such verbs is *get*. Aside from its uses as a main verb, it appears in six grammatical patterns, each having a different meaning. These are all the patterns of this type that the English verb system allows.

Get moving.	(before present participle form)
He got hurt.	(before past participle form)
He got to go.	(before marked infinitive)
Get it moving.	(with included object)
He got it stopped.	(with included object)
He got it to run.	(with included object)

The fact that these formulas are more common in speech than in writing is irrelevant, for they are used and understood generally by speakers of English and therefore must be meaningful to them.

The feedback of a verb form on a collective noun, making it either singular or plural, is generally described in school grammars, but a similar feedback occurs with other subjects.

Playing cards is fun.
Playing cards are often made of plastic.

Contrast these sentences with "playing cards can be expensive," in which the verb form does not distinguish between a singular and a plural meaning. These meanings are distinguishable by intonation, but reading is dependent on visual signals.

A somewhat different kind of feedback is illustrated in the contrast between "growing corn is easy" and "growing corn is green." Both sentences end with an adjectival complement (predicate adjective), but the meanings of the adjectives require different interpretations of the [illegible]. These sentences can be distinguished by transformation ("corn is easy to grow" or [illegible] "[illegible] the corn is easy"), but neither this transformation [illegible] could be [illegible] sentence from the second.

[illegible] An [illegible] a [illegible] is a form or usually [illegible] than a [illegible] (illustrated by the [illegible] especially [illegible] relative [illegible] is [illegible]) [illegible]

tain some clearly marked point of reference. Positions in a pattern are established by reference to this point. It seems to me that this point of reference is ordinarily a finite verb form. Each single-word verb that establishes a clause must be a simple present form (with or without -s) or a simple past form. Each finite verb phrase must begin with such a form or with one of the modals (*shall, will, may*, etc.). With a few identifiable exceptions, commands begin with an uninflected verb form, questions insert the subject within the verb unless the verb is a form of *be* or *have*, and statements usually have the subject before the verb, although other positions are possible if the element preceding the verb is a form incapable of nominal function (e.g. "[illegible] were the reasons." [illegible] as a [illegible] it must be [illegible] by a [illegible] usually [illegible]).

The third basic [illegible] which [illegible] meaning in English can [illegible] through [illegible]tion. Nearly all modern grammars give a list. The basic [illegible] of a particular [illegible] [illegible] and their [illegible] "[illegible]" [illegible]

[illegible]

Basic patterns assume selection and expansion according to a list of possibilities; kernels assume transformations according to a list of obligatory or permitted manipulations of successive formulas. A typical expansion is the addition of a modifier; a typical matter of selection is the use of a participle form as a nominal; and a typical transformation is the production, by successive steps, of a question from a statement kernel. The different processes sometimes require different initial formulas. Pedagogical applications of both procedures now assume a native speaker's intuitive grasp of the grammatical system, that is, his ability to use it and to know when it is being used, but do not assume that he can give a meaningful description of this system.

A final word: the discoveries of the past few years are not simply inventions of new terms but are fundamentally different approaches to grammatical description, assuming a different concept of the nature of language itself. The use of new terms is not central but a necessary concomitant. None of the new approaches can be mastered simply by reading a book.

Language Factors Involved in Interpretation

LUELLA B. COOK[*]

OVER THE past few decades we have made remarkable progress in discovering how children learn, and as a consequence the techniques for teaching reading have been greatly improved. But we have made equally significant progress in understanding the nature of language as an instrument for the expression and communication of meaning. Both kinds of knowledge are essential to the improvement of teaching, and the tendency to rate one as more important than the other is one of those tragic mistakes which seem often to accompany a new discovery. Our pupils need teachers who understand both the complex nature of the growing child and the equally complex nature of language, which also grows and changes and interacts upon those who use it.

Modern linguistics and semantics bring new concepts to the teaching of the language arts, although these new concepts are only now beginning to filter down into textbooks and classroom procedure. This new knowledge, moreover, is not the kind of knowledge which can be transmitted in neatly wrapped packages ready for immediate use. It must first be assimilated as a kind of intellectual nourishment before it can be used in the countless small but important ways which a deeper knowledge can usually suggest.

It is this fact, perhaps, which discourages the all too busy teacher, eager to improve methods of teaching but pressed on all sides by new bids for his attention. There just isn't time to "soak up" a new subject, as a plant soaks up nutriment from the soil; time only—so it often seems—for a quick watering from the top, if the soil seems dry. We live in a crowded, hurried age, a "practical age" we call it, and our attention is drawn almost irresistibly to materials and methods, tried and tested and guaranteed to work, rather than to new content.

It is here, one suspects, that the weakness of the "modern" position lies: in an overweening faith in the immediately workable, and a corresponding loss of faith in the values of a deeper, more penetrating knowledge on which we ourselves may rely as we face the day-to-day problems of language teaching.

It has been said flippantly that the place of grammar in the school curriculum (elementary and secondary) is largely inside the teacher's own head, to be drawn out and used as occasion suggests. There is hidden wisdom in the quip, and it is largely the insecure teacher, one suspects, with only a limited, formalized grasp of his subject, who makes of grammar a moot issue, insisting that it be taught outright, as a subject in itself, at a specified time and place.

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[*] *The Reading Teacher*, 12, (February 1959), 152-157.

When children first come to school at age five or six they already "know" grammar in a very practical way: they can put words together into sentences, manipulate subjects and predicates, even punctuate orally, by pause and inflection. Who among us would not envy a similar command of a foreign language, unrecognized and unorganized though such knowledge be. We tend to ignore this kind of knowing, and regard grammar and punctuation as sets of rules to be *applied* to language rather than as the very nerve and sinew of the language itself.

In many minds the word *grammar* is associated primarily with the idea of correctness in speech and writing. A knowledge of grammar, it is assumed, will protect one from making errors in word form or syntax — errors which carry heavy social penalties. To make a grammatical error reflects on one's cultural background, lowers social standing, and reveals a lack of schooling. Despite the fact that statistical studies show very little correlation between a knowledge of grammar as such and habits of correct speech and writing, the idea still persists that the chief reason for studying grammar is to be able to speak and write acceptably. We have still to rescue grammar from this limited view and to accord to it the full importance it deserves as an aid not only to the expression of meaning but also to the interpretation of meaning.

Traditionally grammar is taught in connection with speech and writing, rather than in connection with reading and listening. Yet a long, complicated sentence, with its subject and predicate separated by modifiers; or a compressed statement in verse, with connecting elements implied rather than directly expressed; or an isolated grammatical element standing alone in the lines of a play, its relationship buried in the context of the dialogue—these are problems that confront readers and listeners at all grade levels as they struggle with meaning. That we have been reluctant to take full advantage of these opportunities to deepen and strengthen pupils' understanding of language structure is perhaps attributable to our prejudice against analysis in the study of literature. It all depends, of course, on how, when and where analysis is conducted. That minute ill-timed analysis of sentences has blocked appreciation and enjoyment of a poem or story is all too true. That it need not do so is equally obvious. Assuming that analysis follows rather than precedes an effort to secure a total view and total response, the search for hidden meaning can lead quite naturally to the locating and naming of sentence elements.

Punctuation, too, we have regarded primarily as a discipline of writing rather than as an aid to reading. Yet obviously a writer punctuates not for himself but for his reader. Perhaps we would succeed better in teaching pupils to use punctuation marks if we first made them aware of their importance as an aid to interpretation. That we have not commonly done so is perhaps accounted for by our tendency to regard punctuation, like grammar, as a subject in itself, divorced from the problems of communication, a set of rules to be learned and *then* applied, rather than as a set of convenient devices constantly employed on the printed page to facilitate the grasp of meaning.

Rules of grammar or of punctuation are important chiefly as concise summaries of facts previously noted. By themselves they often block understanding . . . until one sees what they mean. Knowing the rules is no guarantee that one will apply them; but applying them is proof that one knows them.

I was thinking of this one day after [illegible] a different [illegible] than [illegible]. You wouldn't [illegible] were the words that [illegible] [illegible] Then, [illegible]

[illegible]

Rainbow on the Road, a delightful novel by Esther Forbes, on the book jacket of which John P. Marquand had this to say: "I have never seen the illusion of a period (early 1800's) so beautifully presented. Somehow she has caught the whole spirit of New England which I used to recognize when I talked to very old people during my childhood."

As I read the book I was happily aware of how it was the language itself, as much as any other single element, which expressed that spirit, and I began to note how many little side excursions into the field of language structure and usage a teacher might plan for a class of youngsters during the reading of such a book. The quaint idioms of the style, such as "cottoning on" for catching on to something, the [illegible] of using the [illegible] of "could of" for "could have," suggested to me [illegible]

[illegible]

tence would create any real difficulty of interpretation even for students in the late elementary grades, but its strange use of *deep* as a transitive verb and the humorous turn of thought at the end of the sentence, resulting from the compression of a whole sentence into a single verb, provides a lead into a discussion of language structure. What *is* the complete sentence which the two words "eat them" stands for? How would we phrase the thought? The use of quotation marks around the various idioms sounds a warning that the words are to be taken with a grain of salt. Such facts about the story seem to me to be worth calling attention to, helping pupils by skillful questions to make their own observations of the structure of thought.

Here is another brief passage I noted in my reading, a one which might lead to still another insight into the structure of thought:

"But take Britain, surely that great [illegible] against the barbarism of Rome? It was, how much did [illegible] still [illegible] [illegible] How [illegible] [illegible] Carthage, Hannibal [illegible] [illegible] that [illegible]"

[illegible]

correctness might be to ask them to supply the missing elements, or to find the way that grammatically complete parts are linked together—sometimes, as in the first sentence above, by a comma. If this seems heresy, consider for a moment which is the more important concept: the grammatically complete unit, or the manner of indicating it. There seem to be reasons why the author and the editors preferred to use a comma after *Carthage*, instead of a semicolon. Were I to use this passage to help pupils gain insights into language structure I should help them find these reasons, rather than stress too heavily the "error" of the comma splice.

Similarly I would set them to looking for the missing sentence elements in the rest of the passage, asking them to complete the clause that begins with the subject [illegible] [illegible] Or I'd ask them to add a clause to "Try [illegible] Carthage, Hannibal [illegible] with [illegible] in order to make clear the meaning which seems to be [illegible] between the lines.

[illegible]

was thinking about this article, I noticed how Gracie's humor depends in large part on her failure to supply the missing parts which in ordinary conversation we all omit, trusting to our listeners to supply them. It is they, as much as we, who should know their grammar—know it well enough to accept our incomplete statements which nevertheless make complete sense.

Gracie came bursting in on George, who had been waiting long for his dinner, with the announcement that Dr. Somebody-or-Other was coming over to help the Mortons (the Allen's neighbors) with their marital troubles. Leaping right over Gracie's words, George said to Gracie, "How about getting dinner?" Replied Gracie: "Oh no, George, he's a psychiatrist not a cook. He couldn't do that."

Gracie's delightful humor consists in part of ignoring contextual clues, of failing to put two and two together as she listens to other people.

The point of all this is that both reading and listening offer a wealth of material for helping pupils observe the intricacies of language structure as it is both expressed and implied. Were we to use language less fearfully—fearful that our pupils will pick up bad habits of speech and writing—and more discerningly we would build a kind of understanding and interest in language as a phenomenon, which would make much simpler the task of teaching various social conformities in the use of language. Conformity for conformity's own sake is a difficult pill to swallow. Conformity for valid reasons, applied to matters one understands, is more readily accepted.

These are but some of the more obvious language factors involved in the interpretation of meaning as they are suggested by one's own understanding of modern linguistics. From the field of semantics come other language factors easily incorporated in our teaching of reading and in the study of literature. One of these has been previously mentioned in connection with one of the passages from *Rainbow on the Road*, the concept of connotation. The difference between the denotation and connotation of words is an important language factor, appropriately taught functionally at all grade levels. Recognition of the difference between what a word *says* and what it *means* in its total context is a semantic discipline, easily incorporated into vocabulary study or the interpretation of literature. As pupils of all ages seek the full meaning of a poem, response to its emotional meaning is as important as grasp of intellectual content, and the association of words is as important an item of content as is their pronunciation, spelling, and definition.

Here again observation plays its distinctive part, and I can think of no material more readily available for this purpose than that found in advertising where the use of words to affect judgment has been developed to such a high degree. Once pupils recognize the magic of words in themselves—even in cruder and more vulgar forms — the way is cleared for the more subtle responses elicited by literature. The sound and movement of words, their rich suggestiveness, sometimes by their tonal effects, sometimes by their associations, are a vital factor in communication, not confined to literature, but used daily by everyone to enhance or supplement meaning.

There are other language concepts to be introduced to pupils in their study of language, already familiar to teachers of literature: the concept of irony, innuendo, under- and overstatement. These, too, are language phenomena to be first observed before they can be understood. And there are an increasing number of books retailing to the laymen other fascinating facts of semantics. New tests are on the market, too, dealing with these more subtle aspects of appreciation.

Ours is, indeed, a rich content field, as well as a skill-subject, and the rewards of exploring that field to see what new knowledge can be put to use in the development of language skill are many and varied. We need, I think, to re-examine that field, to see how much it has grown since we ourselves were undergraduates, how it has both broadened and deepened our understanding of the world in which we live: a world in which people struggle desperately to understand one another before it is too late; a world in which the problems of communication are crucial and involve factors that go far beyond conventional correctness and social conformity.

USE OF CONTEXTUAL CLUES

As children read successive passages, they are confronted by problems of relating each passage to those coming before and after it, and of relating it to an article as a whole. Here the reader considers such matters as the purpose of the author, passages that precede and give a setting to the one currently under consideration, and the setting *in toto* within a book or an entire situation which is involved.

Context Aids in Reading

CONSTANCE M. MCCULLOUGH*

THE VERBAL woods are full of context aids to reading. Completion-test writers have borne inadvertent testimony to this fact with such items as: "Mary and John went on a picnic and took pickles and olives. Mary ate the olives and John ate the ______." Essentially, what were the test writers doing? They were controlling the information in such a way that all evidence led to one conclusion. Or, if they found this control difficult, they covered their tracks with multiple choices which ruled out all but their intention.

Throughout the history of the teaching of reading, many a teacher has said, "Look at the word. Don't guess." But now we add, "See whether it makes sense in the sentence." We recognize that the good reader not only observes words carefully if necessary, but also thinks of the relationship of those words to each other and to the sense of the whole. This second attribute of a good reader is still an area of considerable ignorance among us; hence this article is a progress report rather than the ultimate.

The Reader's Purpose in Noting Aids

An obvious purpose for being interested in contextual aids in reading is to determine the meaning of a word whose sense, for one reason or another, presents a problem. (1) Perhaps the word is a complete stranger in form. We can take the lazy way out and search for its identity through context rather than study it. For the beginning reader, this is not just the lazy way; it is the only way. Or, having analyzed the word, we study the context to see whether it makes sense as we have solved it, much as we would check the answer to column addition by adding in the reverse direction. (2) Perhaps the word is strange in meaning. A technical word such as *Orthoptera* does the novice little good until the context reveals the scope of its meaning. I may have analyzed the word *context* and may have determined its meaning from the Latin as *join together*; but until I have gauged what the author concedes to be the scope and nature of *context* by his use of it, I am still far from my objective of understanding. (3) The word may be a familiar one, like *band*, used in one of its less common senses. The writer speaks of *band norms* for a test. The reader accustomed to little German bands, rubber bands, robber bands, and abdominal bands, is temporarily blocked. It is only when the author explains that *band norms* are norms which describe a broad area of scores rather than a single score, that the reader grasps the analogy. (4) The word may be used, not in the sense ordinarily denoted by it, but in a connotative sense. "I feel at *home* here." The literal reader suffers a jolt. The figurative reader gathers that the writer is experiencing the sensations associated with his literal home, although he may actually be far from it in a physical sense.

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* *The Reading Teacher*, 11 (April 1958), 225-229.

But the context problem is not confined to the matter of the identity of single words in a maze of verbal patterns. It embraces the identity of larger units, such as phrases and sentences. (1) An author writes, "The ultimate character of perceptual objects is that they are Aristotelian pervasive adjectives which are the controls of ingression." I may know the meaning of each word in this passage; indeed, I may understand completely the sentence structure and the relationships so effected. Yet without a revealing context (or a philosophical background which substitutes for present verbal context), the passage is mumbo jumbo. (2) Again, an author may write, "This is a nice point." The meaning of this sentence pivots upon the selection of meaning for the word *nice*. But the whole meaning is undetermined until the context around the sentence indicates the proper choice.

How Far for Aid?

How far must the reader travel for aid to the meaning of the material he is reading? Perhaps the phrase or sentence he is reading will clarify his problem. Perhaps the paragraph or paragraphs before or after the trouble-spot will be required. The shade of meaning in a word may hinge upon the tone and subject matter of a whole chapter or book. An adjective applied to a political figure may be interpreted sometimes simply by a reminder of the tone and slant of the magazine in which it is printed. Meaning to be attached to a word or statement may sometimes be weighed by the "level" of the audience to which it is directed (the expected interest, education, sophistication, and technical background of the readers). The reader may have to resort to much larger contexts than the page on which he is reading (other books he has read, experiences he has heard or seen or lived). In fact, the absence of experiences to bring to the page may render the immediate ~~contextual~~ aids useless to him.

What Must One Note?

What are the context aids to reading? If the pictorial illustrations are a necessary part of the text, certainly they must be considered contextual aids. Then there are verbal clues representing various kinds of idea relationships to the unknown word or expression. In the sentence, "He is a . . . ." there is no such clue. The missing word, for all we know, may be a compliment or a damnation. But other sentences give one or more clues of distinct types. Usually clues come in combinations rather than singly.

The experience clue draws upon the reader's life experience. "A pair of crows cawed *raucously*." "He removed the watch with the *deftness* of a pickpocket." Life tells the reader about the harsh voice of the crow and the skill of the pickpocket. "I bought bread, butter, *avocados*, and oranges at the grocery." A child who does not know *avocados*, but knows the grocery and other foods, classifies *avocados* as food.

The comparison or contrast clue uses the reader's knowledge of one word to provide comparison or contrast with an unknown word. "Ed was talkative while Bill remained *taciturn*." The sentence structure provides a parallelism and contrast, and the reader merely thinks the opposite of *talkative*. Knowledge of sentence structure should help here.

The synonym clue occurs when the sentence calls for a repetition of the same word, and a synonym instead is given. "He had never been so gay. He was simply *buoyant*." "Bill was eager to know the outcome. Ed, too, was *anxious*."

The summary clue is one in which the strange word is a summary of several ideas that have been, or are to be, presented. "The room was completely *disheveled*. Chairs were overturned. Pillows were thrown helter-skelter. Parts of the newspaper lay about the floor." The details of the description lead the reader to a generalization, "mess," which gives him the intent of *disheveled*.

The strange word may be a reflection of a mood or situation. "The day was dull. Clouds hung low and black overhead. The air was oppressive. This dreary landscape cast a spell of *melancholy* over him." The reader has to ask himself what feeling the dullness, the blackness, the oppressiveness, the dreariness give him. "Her brothers started off without her. Mildred ran after them. 'But you were going to take me,' she *protested*." Protest is implied by the situation.

The definition clue is one in which the strange word is defined in the surrounding context. "The land was dry and sandy. It was, in fact, a *desert* place."

The clue of familiar expression or language experience requires for its discovery a reader who has developed a familiarity with certain common language patterns. At the end of a first encounter, a smile and "I'm happy to have made your acquaintance" have meaning even to the foreigner. "As *famished* as a bear" and "Have a *Jolly* Christmas" are strained but perfectly understandable dodges of the familiar *hungry* and *merry*. The understanding of slang depends a good deal upon situation and common expressions. The person is puzzled and says, "I don't dig you." The situation and the common expression, "I don't understand you," are the clues. A person does something utterly predictable, conservative, and unimaginative. "What a square!" someone says. The use of slang is a convenient way of giving the listener or reader all the work of interpretation, of finding clues.

The clues just described apply as well to phrases, sentences and larger units of composition as to single words. When, in a preprimer story, Mother says, "Here we are!" she is not merely stating the obvious. Having gone with her children to the airport to retrieve Father, she is, in essence, saying, "We're all together again. I've got my man back." The depth of meaning in the statement "Here we are!" is to be discovered by analysis of the human situation surrounding those words. Again, "somebody has to stay here and mind the camp." This may be a mere statement of fact, a complaint, or an expression of personal responsibility or personal sacrifice. It may be said ironically. There are many possible interpretations. Only the situation surrounding the words will tell.

The clues mentioned above may be considered *idea* clues. There are in addition, *presentation* clues. Dr. C. C. Fries of the University of Michigan, by use of such sentences as "The iggle oggled the uggle," has made us aware of the importance of the order of words to the structure of our language and our meaning. By the very position of words in the sentence, the functions of the words and, to this extent, their meanings are suggested. The ability of a reader to decide the identity of referent words (*his, who, them,* etc.) is partly due to his knowledge of sentence structure. "The owner of the kennel *who* has won many prizes," "The owner of the kennel, *who* has won many prizes," and "The owner of the kennel *that* has won many prizes" may mean two or three different things. The kind of referent word, its position, and the meaning of punctuation must be taken into account.

Paragraphing is another kind of presentation clue. If the new topic is given a new paragraph in a series of paragraphs on related topics, it may be supposed that the new topic is of equal importance and one of the series. If, within a descriptive passage, something is left unmentioned, it may be deduced that perhaps the strange word or expression is the missing link. The fact that the paragraph or larger unit is organized logically or chronologically suggests meaning. The reader, thinking "These are all ideas of location (function, appearance)," is helped to identify the strange idea. Knowledge of internal paragraph structure, too, helps him to know what contribution the strange word is supposed to be making.

General organization may imply meaning that is not given in so many words anywhere in the composition. The fact that John Gunther's *Inside Asia* started with Japan meant something special when the book was written, during the years of Japanese expansion in the Orient. If the reader does not note this, the contribution of organization to meaning is lost.

Titles, sectional and marginal headings, footnotes, and mechanical aids such as punctuation and capitalization may be additional presentation clues to the reader.

What Progress?

When one contemplates all of the remarkable variety of clues to meaning which lurk on every page of print, one wonders why anyone has trouble reading for meaning. Yet research has nothing very flattering to say about the ability of Americans to read with breadth and depth, or even accuracy, of comprehension. Many of us can sound the words and say them, and read them "with expression," but are still unaware of some of the clues to meaning.

One of the interesting observations made in early research in contextual aids to reading was the fact that bright children seemed not particularly more able than the less well endowed to profit by the aids. The presence of better brains was no assurance of greater awareness. We had erroneously assumed that, given the words and the sounds, children would stumble upon techniques of deriving meaning without us. We had thought that keen interest would assure depth of comprehension.

To a small degree these things are true. But, like every other reading skill that has been investigated, awareness and use of contextual aids are best effected by direct teaching and continuous attention. These techniques have not been learned because we did not know well enough what they were or how to teach them. Until we begin to define this area of learning and to make it a part of a continuous developmental program, until we begin to teach the techniques as well as require their use, the whole matter of comprehension must flounder. For this reason it is very gratifying that THE READING TEACHER offers the articles that follow in this issue.

Context Clues in Primary Reading

SISTER MARIAM, O.P.*

THE FIRST GRADERS were returning from a trip to the bakery. One of the fourth graders met the six-year-olds inside the door of the school. "What did you see when you went to Colonial?" he asked.

"Lots of flour and they mix it with yeast." "Before they baked it they put it in a hot room . . . ." "Big conveyors . . . ." "It takes a lot of people to make a loaf of bread."

This teacher had obviously guided her children in this experience. They had been directed to what they would see. The results were self-evident. Careful pre-planning had paid dividends. The children were filled with the experience and wanted to tell about it.

The teacher's job was not done, however. The children would be given time to make pictures of what they saw; she would send them home with the wish to tell their parents all about it; but the best time of all would be the morning of the following day when they (teacher with brush pen and paper, the children eager to contribute ideas) would pool their thoughts about their trip to the bakery. Followed Utopia! Everyone, including Johnny, was reading; and that specific skill called "Guess" by some, but more properly called "Context Clues," was being given a chance to function. As the children read the chart story of their very own trip, they experienced no difficulty because the gap had been bridged between their experience and the printed word.

We went to the bakery.
We saw the men working.
We saw big bags of flour.
We saw the dough rise.
Soon the dough went into the oven.
It was *really* bread.

The six-year-olds easily caught the rhythm of the new words and ideas, for they had experienced the whole story themselves. Thus the effective teacher of reading provides a background for developing the use of context clues.

Because we want children's free and spontaneous expression as they read, the procedure described above would seem to be a sure way to lay a foundation for just such expression in the primary grades. We adults are continuously required to use experience clues to unlock meaning, and to unlock words. We do not divorce meaning from reading, no matter on what level we work. We conscientiously strive to lay a solid foundation for this skill in the primary reading program.

The child who steps before the teacher and tells her about a new baby brother at her house is delighted when later in the day she discovers in a spot on the bulletin board or chalk board this story (on the actual chart each sentence began a new line): "Karen has a new baby

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The Reading Teacher, 11, (April 1958), 230-234.

brother. Karen's mother is happy. Karen's father is happy. Karen is happy too." Before the day is over many will have unlocked *brother* and *happy* because Karen has told them what happened.

Actually, what the teacher is doing here is helping each child to learn the satisfaction that comes to an independent reader, the person who can use all available clues to help himself read with ease and understanding. Teachers generally are advised to follow a series of steps in teaching beginning readers to recognize words and to read for meaning. Context clues merit a prominent place in this total reading picture. Going hand in hand with experience, they help make functional reading possible.

Second graders plan a flower show. They outline their plans, and committee work is done. Flowers are made of paper, metal, cardboard, and scraps of felt. The children construct a shop of boards or wooden boxes, and open the shop for business. A story is written (by an individual or planned by the group) and each child profits. The vocabulary of the story (names of flowers, plans of the "what" and "how" of the construction of the shop) will not present a reading hurdle. The children will bring experience as well as skill to the printed story. They will use the meaningful context to infer the meaning and pronunciation of unknown words.

Basic to the use of context clues is the important general concept that reading is a meaningful process. It is said with a great deal of assurance that context clues are one of the most important keys in unlocking words. It very often happens in the reading situation, however, that a two-fold job must be done by the child: (1) He may need to unlock a word with more than one meaning, and often with more than one pronunciation. (2) Often meaning, and sometimes pronunciation, has to be determined from the context. Thus, using context clues becomes a circular process — the meaning derived from experience aids in unlocking words in context, and the context acts as a background and stimulus for unlocking meaning, understanding, and pronunciation.

In the Kindergarten

What kind of practice can a kindergarten teacher give her children that will pave the way for using context clues as an aid in primary reading? The teacher of the very young child is aware of the importance of setting the proper atmosphere for a readiness program that will give her children a feeling of security as they move into the developmental reading program in the next grade. Her language arts period will be alive. Since she will aim to bring five-year-olds and stories together, she will retell the same story often so they can join in the refrain. Children easily catch the lilt and the rhythm in "Before you could wink an eyelash, Jack, Kack, Lack, Mack, Nack, Ouack, Pack, and Quack fell into line, just as they had been taught. Mrs. Mallard led the way into the water and they swam behind her to the opposite bank."

Robert McClosky* has created a story for children to absorb. Not only the pictures, but the words themselves ask for "read it again." Each rereading or retelling with the pictures will find the audience becoming more a part of the telling. It is not uncommon for kindergarteners in the retelling of the story to a younger brother or sister to be heard to say: "Mrs. Mallard had to sit on the eggs to keep them warm. She moved off the nest only to get a drink of water, or to have her lunch, or to count her eggs and make sure they were still all there."

What is happening to this storyteller? He is imitating his teacher, that is true, but more than that, he is building within himself, quite unconsciously, the ability to "talk along" fluently and with expression. He will have a firm conviction that this is a good book to read for himself later on because he knows (from hearing) so many of the good parts already.

Story Atmosphere Is Stimulating

Experience with books at the prereading level will greatly facilitate the learning of first graders when they approach the printed symbol. The wise first-grade teacher will build on the program already begun in the kindergarten. On a day early in the fall she will gather the youngsters in story fashion and begin to tell a familiar tale. It may be one told to the class last year, or one of the perennial favorites. *Black Sambo* or *The Three Little Pigs* can be used, and of course no one ever outgrows *Billy Goats Gruff* or *Red Riding Hood*. She may begin the story herself, and then when the third tiger is ready to "eat you up," let Tony tell what offering Sambo made to avert the threat. Nothing is lost in the break in the story, and much is gained; children are using context (at the auditory level) to supply clues for the rest of the story. When this skill is transferred to the actual reading situation, it will not be unknown for them to anticipate outcomes, or to predict what the next part of a story will be. (Notice the use of *anticipate* and *predict* in exchange for *guess.*)

This technique is not reserved for familiar stories. Sit in comfortable circle fashion and begin a story yourself. Turn to a child next to you and ask him to add something to the story. Then have turns taken around the circle. It should go something like this:

The teacher starts: "Tom and Tim were twin boys who lived on a farm. One morning they woke up to see their pet . . . ." *Janie adds:* ". . . lamb run out of the barn in a big hurry." *Now it is Katie's turn:* "The twins heard a funny noise as if one other animal was hurt." *Larry comes to the rescue with:* "The only thing for the twins to do was to rush to the barn and see what was the matter. They sure were scared."

The six-year-olds are talking along with their ideas and the context to guide them. The groundwork for the ideas was laid, the teacher gave them an opportunity to use the ideas in

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*From Robert McClosky, *Make Way for Ducklings*, published by Viking.

context thus bridging another gap between experience and the learning skill we want for children.

Just a question, "How do you think this story will begin?" asked after the title of a book has been told, will evoke thinking. This is what we want our children to do. We want them to have this foundation so that when they *read* along in a primer, they will be *thinking* along with the author. Watch yourself as an adult reader. Do you reach for a dictionary each time you meet an unfamiliar word in the morning newspaper or in a magazine? Or do you unlock the word from the way it makes sense in the article?

Afford children the opportunity to choose from two or three words the one that will best suit the context. Skill in discriminating between words is an aid to reading at any level. For variety in motivation, make a chart with a mother kangaroo and her baby. In the pouch of the mother kangaroo place a sentence that has a word missing. Ask the child to read the sentence and choose from the smaller kangaroo's paw the word that best makes sense in the sentence.

What Are Words?

Second and third graders find satisfaction in discovering multiple meanings for the same word. The charming book *Sparkel and Spin,* by Ann and Paul Rand,* can give a guide in doing this. Use the caption, "What are words for?" for the springboard. "What are words? Words are how what you think inside comes out, and how to remember what you might forget about."

Then let the children go ahead to discover. "Watch" for Karen means waiting for her Daddy; while "watch" for Robbie is the birthday gift from Grandpa. "Sink" means what a boat does in dangerous water to third-grade Michael; while to Ann it is a place to wash dishes. Butch pictures "horn" on a bull's head; and Sue hears "horn" when her brother practices his instrument.

Or use this quotation from the same book: "Sometimes one word sounds the same as another, like hair and hare or pair and pare." It is not difficult to see the possibilities in these few words when used by a stimulating teacher. This meeting of words in context and applying experience to the symbols to unlock the new word is a fascinating exercise.

The teacher of primary children who motivates her reading by the following types of situations is developing an awareness of context clues in her children. "This is a story about a pet the children found on their way to school. He was a small animal with a bushy tail. Since he likes to eat nuts, we know he is a ________." Exercises like this can be used as independent work during the day. It is good to have a supply of riddles tucked in an envelope on the "choose" table. Label the envelope "What Am I?" Another exercise to promote awareness of context clues would be typed sentences with one word missing. Give the child a choice of two words and let him write the sentence, putting in the correct word. Sentences may be illustrated to offer variety.

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*Published by Harcourt Brace and Co.

What are we trying to do for children? Through well structured programs of reading instruction we assist the child in using the vital context clue in unlocking words. We help him use the skill comfortably, beginning with stories, books, and actual activities that promote growth in understanding and meaning. We start at a pre-reading level and continue until he feels that security that comes with success in a task. In this climate of "reading for meaning," "meaningful approaches," "understanding of reading," etc., children learn to read for meaning. They will be purposeful readers: the gap will have been bridged between their experience and their reading skill. They will have one more tool to aid them in discovering the wonder of words and ideas.

The Larger Context: Setting

LOU LABRANT*

THE LITTLE book began with an account of a short motor trip to Eton. The readers knew how to find the meaning of a word from context, and so guessed that the "petrol" which was put into the car and measured in gallons must be gasoline. But though they could read aloud as though they understood, and though individual words were clear, they still were vague about what was going on. The teacher began to ask about the scene. Where was it laid? When? The readers did not know. There was mention of a war. But, they affirmed, the author did not tell them what war, or time, or place.

A little analysis cleared things up. "Petrol" was a hint that the country was England rather than the United States. Since moderately prosperous people did not have cars in the days of World War I, the conflict going on was probably World War II. There had evidently not as yet been great destruction, and the time must therefore be about 1940. Without too much difficulty here was the answer: England, near London, 1940. Interpretation in this case was fairly easy to work out, but the more basic question was why these youngsters, reading relatively easy materials, had not learned how they could independently use resources in the text as a whole to find time and place. For just as we derive a word's meaning from those other words which surround it, so we must be able to determine setting. Often even the very literal meaning of a sentence depends on the scene.

Time and place must usually be derived from context. Once discovered, however, they themselves form a larger context, a setting in which action, the characters of the actors, and the final meaning are to be understood. For example, "to go by train" to California in days of the prairie schooner does not mean the same as "to go by train" today. The cues in the story set in England probably seem obvious to you, the present reader. The adolescents concerned, however, were confused, and obviously could not understand events until the setting was clear.

Perhaps a word should be said here about the differences between the familiar screen story and the written tale. The sentence, "He came riding up to the village store," leaves to the reader the costume of the rider, the type of road (a dusty trail? a wide paved avenue?), the height and building material of the "store," and so forth. The movie furnishes all of these. There is no doubt that the picture puts much less burden on the watcher than the written narrative does on its reader. For this reason, the problem of context in the larger sense of setting may need more careful teaching today than in a previous generation.

[The Reading Teacher, 11, (April 1958), 234-238.

How can the reader find his location in space and time? Some of the simplest tales, of course, begin by saying, "It was in a little village on the coast of Norway in the year 1244." This far-from-subtle method is used in books for the very young, or for the less able, but rarely for the older reader. Even young readers can, however, learn what the signals are. We might consider some of them here.

Hints as to date and place often go together. Mention of Richard I of England furnishes time, and possibly place, though he was a wandering man and might appear in many places on the Continent. Richard represents one kind of cue, however, the famous name. An interesting discussion will frequently occur when one asks the simple question, "What famous persons are mentioned in your latest-read book?" We often make the point that reading fiction is one method for enriching history. It is of questionable value, however, unless the story gets placed in the stream of events. Youngsters are easily interested in using great names as clues, associating them with dates and events. Famous names are therefore one contextual device.

A second set of clues to time and place is found in means for transportation. How did the characters travel? Not infrequently someone arriving or departing appears in the early pages of a book. How did he come? By horse? If so, is the saddle mentioned? Perhaps he was carried in some sort of basket or sedan. (*Sedan* means one thing in the United States today, another in 1750 Europe.) Or he came in a wagon, or by train. If the latter, the type of railroad carriage may be a hint. A plane or large ocean liner points to modern times.

Transportation is, however, a better clue for the past hundred than for earlier years. A man might, indeed, travel by horse in ancient Italy, or until 1900 in England, or in the early United States, with similar speed and with similar frequency. Transportation is only a rough sign, and this may be discussed by your class. "I know," said a boy, "that this story happened after 1790 because the people were on a steamship; but I don't know *how much* after."

Buildings furnish clues. An American house with a huge kitchen where cooking goes on at a fireplace probably indicates a setting of a hundred or more years ago. Is there a great hall, typical of feudal Europe? A stone castle? A sod house? A log cabin? What of the surroundings? Are there primeval forests, city streets, country lanes? Young readers will find attention to all of these clues more interesting when they see that the details of the setting are meaningful.

Another interesting set of clues is clothing: the cloak, the full skirt, the toga, the jerkin, armour, uniform. Furniture is also a clue: the sofa or the couch or davenport, the great curtained bed or the closet for sleeping, the mat, the hammock. So too is food and its storage: the kettle of gruel on the hearth, the roast of meat on the spit, baked corn bread, the formal dinner, wines, wild game, home dried fruits, or frozen foods. There are the deep wells, cold springs, cool cellars, refrigerators. Other signs can be found in occupations and in class groups: students, serfs, pirates, knights, pilgrims, sailors, farmers, factory workers. There are pioneers, prospectors, cowboys, and gold-rush men. There is the time when women of means work only in their homes, when the mistress wears keys on her belt, when women work in the fields. These activities tied to the particular country furnish clues about time.

Certainly no one would suggest giving students a list of clues from which to determine setting, but that is not necessary. In the intermediate and junior high school years individualized reading should be abundant. All too often each book is followed by a "book report," a dull piece of writing, a deterrent to reading itself. Instead, much more profitable discussion can be built around the questions just suggested.

The following example was taken from an actual classroom situation.

A seventh-grade teacher directed each youngster in the grade group to bring to class the book he was currently reading (or had just finished). The assignment was made several days in advance to assure the presence of a book for each student. When class opened, the teacher asked the simple questions: "When did your story take place? How do you know?" Only about one-fourth of the class had some idea. To her surprise most of the students could answer no more definitely than "not long ago" or "a long time ago." Despite these vague responses, the readers had not complained of failure to understand nor of difficulty of the text, though some had said their books "weren't very interesting." Obviously, many did not expect to have definite answers. Questioned concerning place, equally vague statements were offered: "somewhere on an ocean," "on a coast," "out west," "on a farm," "in a foreign country."

The teacher pointed out clearly that the vague answers were not enough, that there was something better. She gave one or two examples and then asked for a list of clues which the class could suggest from experience or imagination. Of course the youngsters listed many of the very items mentioned previously in this paper.

The next step was to ask the young readers to turn to the first chapter of their books for a little silent reading, and then to answer the question, "What is the first clue in your book?" Both answers and questions came in the responses. Sometimes the young reader had recourse to a dictionary, turning to the biographical section or to the general alphabetical listing. Dictionaries, of course, differ in their treatment of prominent names, and this is an important fact for students to understand. Who was this great man or woman? When did he live? A variety of specific clues—persons, towns, customs, historical events—were named and noted on the board. In answering the questions of where, readers developed considerable pride. Names of cities, rivers, and mountains helped; but students began to enjoy noting the more subtle hints. After a few lessons the class was finding throughout the book indications of the setting. The country school, the unfenced prairie, or the rough cabin now appeared significant. Presently these seventh-grade youngsters discovered that they need not lump all pioneer life together, that there was a considerable period of time between pioneer life in Kentucky and pioneer life in the Southwest. Many admitted to great vagueness as to just when most westerns were set. Some few discovered anachronisms in poorly written books. One boy, reporting his opinion of a book, wrote: "Carelessly written." Questioned about his comment, he reported: "The author never let you know just when or just where the story took place." Doubting, the teacher examined the book closely and concluded that the boy's judgment was sound.

In reading foreign stories comparative forms of common names often prove interesting and helpful: John, Ivan, Jean, Johannes, Jan, Jon. A few foreign names for places —San, Mons, Rio, Berg, Grad— may be helpful and add to ease in reading.

Not until he has worked with these problems of time and place will the teacher learn how frequently they are overlooked or misunderstood. As was mentioned previously, we too frequently assume that fiction illuminates history, or that history gives a background for fiction. Until we make definite attempt to show how these tie together, many of our young readers will continue to build up logic-tight bodies of experience.

Understanding the relation of setting to characters gives the young reader a sense of command over his material; he can talk intelligently about his book, can understand his characters. Such understanding can be taught by the teacher trained in either the teaching of English or the social studies, and is an appropriate aim of the common learnings and core courses so frequently found at the junior high school level. An understanding of setting is especially needed for the highly individualized reading which sex and exaggerated growth differences of that age make almost imperative. Here is a factor common to all fiction and all biography — a time and a place as background.

Frequently we are aware in the later high school levels, of inadequate control of reading. The teacher who tries, in the senior high school years, to discuss the relation of character to setting is often baffled. One might ask whether the inadequacy of this older reader does not, all too often, stem from his inability to discover accurately just what *is* the scene in which the character operates, and whether he might not read much more understandingly if he had learned this simple method of discovering the larger context.

Two more points should be made. The first is that critical reading, of which we talk so much, depends upon accuracy. The child who reads, "They were gathered in the great ranch house," but does not know whether the ranch house was in Arizona or Illinois, in 1800 or 1880, may seem to read intelligently but does not. The youngster who knows only that his tale was "somewhere on the ocean," but cannot tell whether on the Atlantic, the Pacific, or the Indian Ocean, is not reading critically, even though he can define every word in the sentence he reads. Indeed, unless questioned, he often *seems* to understand his book because in his reports he quotes, uses vague terms, or actually ignores the full context. Of course he can often read orally without revealing his real ignorance.

The second point is that time and place are essentials in reporting any event. Too often we hear that "the English did this," without distinguishing between an English act in 1800, 1920, or 1950. Too many times a man is quoted without question as to when and under what circumstances he spoke.

This is not, therefore, a small matter, this discovery of setting. The four-year-old may be satisfied with "once upon a time" and a "far, far away place"; but the child who can read for himself must learn to find that far away place, and know its relation to the time when once things were thus. For just as the word *slave* had one meaning in classical Rome and another in the United States in 1850, so an action or an event, told in a sentence, a paragraph, or a chapter, has its meaning colored by its large context — the time and place of its occurrence.

BARRIERS TO COMPREHENSION

Any teacher interested in developing pupils' ability to comprehend must consider what difficulties the children or youth may encounter. Then can be planned measures to remove or at least mitigate the barriers to understanding. In this section are considered such barriers as the diversity of the American English language, and the damaging effects of cultural deprivation. Also the reader will find many constructive suggestions for meeting the barriers.

Dialect Barriers to Reading Comprehension

KENNETH S. GOODMAN*

THE HYPOTHESIS of this paper is: The more divergence there is between the dialect of the learner and the dialect of learning the more difficult will be the task of learning to read.

Each of us speaks a dialect of English distinguished from all other dialects by its sounds, grammar, vocabulary, and idioms. The dialect each child learns in the intimacy of his own home is his mother tongue, his vital means of communication with the world. It is rooted in his sub-culture. Some dialects may be more socially prestigeful but no dialect is more effective than any other for the sub-culture which uses it. Rejecting a child's speech in school is worse than any other kind of rejection because it jeopardizes the child's means of self-expression and communication.

Children have become so skilled in the use of their mother tongue, the native dialect, by the time they start school that they judge what is right and wrong in language by whether it fits within the system of their own dialects. These dialects are not vulgarizations of standard English but systematic language strains. The process by which language is learned is the same whether the language is standard or divergent.

We use the term divergent to indicate a dialect that is different from that which the school treats as standard. It is important to avoid labeling dialects as better or worse than others.

Divergent language in an isolated rural community is more homogenous than that of the urban "melting pot." There is a diversity of language shading off from distinct divergent dialect to near standard in the centers of our great cities.

All speakers of a language are ethnocentric. They regard their own speech as correct and all others as incorrect. Teachers must avoid yielding to their own ethnocentrism. They must accept language in all its variety. Teachers must also learn to distinguish language divergence which is based on immaturity and that which is dialect based. Children's immaturity in language is inconsistent with the dialect they speak and is on its way out of their language. But dialect-based divergence is constantly being reinforced by the child's parents, friends, and neighbors.

Teachers must abandon the search for a mythical national standard in speech and accept the fact that there are several regional standards, the speech of cultured users of the language in each region. Teachers must also disabuse themselves of all notions that the written language is a standard. No characteristic of written language, such as spelling, can be used to decide what is correct in speech. Written language is only a graphic transcription of the language in its oral form. Language of children should be judged not on correctness but on the criteria of how effective it is in meeting the child's expanding needs to communicate and express himself.

In the classroom of the divergent speaker there are many variants of the language. There are the idiolects, or personal languages, of the child and his classmates. Represented in their speech is the dialect of their parents and their speech com-

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Reading and Inquiry, IRA Proceedings, 10, (1965), 210-212.

munity. The teacher's own informal language is there. But the teacher brings to the classroom a more formal version of the language: his view of how the language *should* be spoken. Literary forms of the language exist in the books in the room. In addition there is the artificial language of the basal reading texts. This multiplicity of language complicates the learning.

Two things are in the favor of the divergent learner in the classroom. First, all speakers of a dialect of language have the ability to understand, fairly well, a range of dialects other than their own, particularly if these dialects are heard frequently. Second, the spelling of American English is constant across dialects. No matter how different words are pronounced the spelling remains the same. *Wash* is spelled *w-a-s-h*. It is not spelled *wawsh, wosh,* or *warsh.*

Now let's look at the specific areas of language divergence which might cause difficulties in learning to read.

Phonemes are the significant sounds of the language. The stock of phonemes for American dialects is basically the same but not all dialects use all phonemes in the same settings. A phoneme is not a single sound but a range of sounds which the speaker considers to be the same. The range of sounds in a given phoneme may vary from one dialect to another. Homophones, words which sound alike, also vary. In my speech *bin* and *been* sound alike. But in other dialects *bean* and *been* are alike, while in still others *Ben* and *been* are homophones. Phonics programs are based on getting the learner to identify a sound in his speech with a letter which represents it in written language. Since the sounds of speech vary so from dialect to dialect no phonics program could ever be satisfactory for all dialects. If a phonics program is not consistent with the dialects of the learner it may confuse him more than it helps.

Recently some new reading programs have appeared, such as the Initial Teaching Alphabet, which attempt to get rid of inconsistency by providing materials in which each letter always represents the same sound. But to be consistent these must either be firmly based on a single standard dialect, or the spelling must vary for each dialect group that uses the system.

Inflectional changes are changes in the words, usually through word endings, to produce changes in tense, person or function. Dialects do vary in this respect. *He see me* with no inflectional ending on *see* is grammatical in some dialects. By grammatical I mean that this phenomenon is not a case of a sloppy speaker dropping a word ending. It is systematic in all such instances in the speaker's dialect. Alternate forms of these word endings are not the same in all dialects. I say *posts* but others say *post-es.*

The syntax of language, the patterns and rules of language sequence, varies somewhat among American English dialects. Some do not use the present tense of *to be* in many utterances. They may say, *I here, He home now* for example. Verb forms and verb markers (auxiliaries) are among the grammatical elements which commonly vary. Some speakers may say *We was going* or *I done it.* These differences, again, are systematic and rooted in the dialect. The learning problems that result can't be solved by spot corrections of individual words and instances.

Dialects vary also in intonation, the patterns of stress and pitch and pause. Perhaps it is the intonation of a strange dialect which makes it hard to understand. Intonation is very important in comprehension of written as well as oral language. No one really knows how much the use of unfamiliar patterns of intonation by a child in his reading may interfere with his comprehension but it is probably considerable.

Dialects also vary in vocabulary. Different words are used to express the same idea and the same word is sometimes used with different meanings in various dialects. Unfamiliar words and unfamiliar uses of words are harder to read than familiar ones. Texts published for a national market can't account for this vocabulary diversity.

Of course even if these dialect problems didn't exist there would still be a problem of cultural diversity. No matter how skilled a reader a person becomes he can't understand things which he reads that are based on experiences and concepts which are beyond him.

With these dialect-based difficulties in mind here are the key elements of what I believe is the best approach to teaching divergent speakers to read.

1. Literacy should be built on the child's existing language.

2. The child's pride in his mother tongue and his confidence in using it to express his ideas and to communicate should be strengthened as a firm base for learning.

3. No attempt should be made to teach the child to speak a preferred or standard dialect while he is learning to read.

4. Children should be encouraged to read the way they speak. Experience stories should preserve their own natural language as much as possible.

5. Specific skill instruction should be based on a careful analysis of the language of the learners.

6. Appropriate experiences, common to the sub-cultures of the learners, and appropriate concepts should be used in reading materials.

7. Teachers must listen carefully to children's language. They must accept and understand it while presenting themselves as models of appropriate effective speech (not stiffly "correct" speech).

8. Language change must be an outward growth and expansion of the native dialect. The child must come to see his dialect as part of a larger language and his sub-culture as part of a larger general culture. The goal should be to expand his language to greater effectiveness, not replace it.

My plea is that reading teachers tune in on the language of the learners, listen, and enjoy its diversity. I believe they can adopt as their creed a motto from Langston Hughes:

"My motto, as I live and learn
Is dig, and be dug in return."

Meeting Barriers to Comprehension

HELEN J. CASKEY*

ALL OF US ARE aware that children encounter difficulties in understanding what they read. The general public makes such worried comments as, "Children in school today can't read as well as they should." Although these persons may also be saying, "Children could pronounce words better if they were taught by a different 'method,' " they do also often mean "understanding of what is read is incomplete." Teachers say, "He misses most of the questions"; and a child himself is the most direct and vigorous in his pronouncement: "I don't get it!"

What is needed, most especially by teachers and learners, is an understanding of why comprehension is often incomplete and inaccurate. What are the barriers that prevent a fuller understanding of what is read? This one is a persistent and troubling question; and while no easy answers are available, we need to look as sharply as possible at the nature of the troubles children encounter.

If "barrier" is an unusual term, it may be a useful one because whatever comes between pupils and their understanding of what they read does offer a pretty solid and formidable obstacle. It is more than a light hurdle, something which may be easily leaped over or lightly pushed aside. There is a demanding struggle to be engaged in if a reader is to surmount the high wall that keeps him from the pleasant reading vistas, the delightful reading pathways, and the joys of fulfillment in reading which lie on the other side of barriers to his understanding of what the printed page has to offer him. As teachers, we must know what barriers exist between the reader and his clear understanding if we are to discover more effective ways of helping pupils to get a good running start and scramble over the difficulties.

Effective Assistance to the Learner is Essential

Although we are eager to help the young reader, it is sometimes possible that our out-stretched helping hands never really touch him. For example, we conscientiously discover weaknesses in specific reading skills; and then we give to pupils, as directed in books and manuals, the practice exercises designed to meet the precise needs of individuals or groups of pupils having the same reading difficulties. In so doing, we anticipate that these specific skills necessary to the understanding of what is read will be so greatly strengthened that improved comprehension will result—an effective procedure, surely. Furthermore, we observe that practice exercises of this sort have been carefully planned and constructed, and more often than not they are pretty glamorously packaged. Newly prepared, keyed to today's interests in space exploration and the like, they appear glossily efficient. Or perhaps we prepare such practice exercises ourselves, thoughtfully adapting them to use words and concepts familiar to our pupils. But in either case one question is quite important: Have we made as certain as we possibly can that the reader himself sees the connection between the practice exercise and the reading tasks he encounters elsewhere? One may be quite competent in answering the questions posed in a given exercise but at the same time unaware that this particular approach to comprehension is related to one's reading problems as far as understanding other printed materials is concerned.

Perhaps to be more certain that our proffered help turns out to be the kind that the pupil can feel is actually boosting him up over his particular barrier we will need to do two things. First, we may help the pupil analyze the nature of his own difficulties; and second, we may make certain that the activities he engages in are clearly related to his own significant reading experiences. Good teachers often, for example, say such things as: "What help do you think you need now? What were you thinking about when you said . . . ? What made you think this one was the best answer? or Before you look for this information, what will you need to do first?"

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*Vistas in Reading, IRA Proceedings, 11, Part 1. (1966), 248-252.

While there is seldom time to allow a description of every boulder in a pupil's barrier to understanding or to analyze every concretion of accumulated failure, we can profit by being sure the learner himself knows as clearly as possible the size and nature of the stumbling blocks in his own path. We can attempt to enlist his judgment about the quickest and most satisfying means of demolition. Actually, it is he who must set off the charge of dynamite!

It is also possible that in our eagerness to boost the learner along to greener fields in reading comprehension, we have lost sight of the helpful effects of present reading pleasure. We may have incorrectly assumed that all contacts with books and reading are fruitful ones, leading to the enjoyment of reading in the widest sense. In fact, in fostering vigorously the development of the skills related to understanding and enjoyment, the pleasure to be found in reading may have been lost. Freedom to explore interesting books with a chance to read for one's own pleasure is a powerful incentive to continued practice. My informants are telling me that even extremely reluctant readers are eager to read about Batman. So long as some interest is present, the reader can gain enough momentum to reach wider and more rewarding interests as more assurance and satisfaction are gained. Freedom to explore may also include freedom from formal questioning or checking up on reading skills. Checking and questioning, essential as they are, need not extend to all reading situations.

It is quite likely, as middle-grade children encounter many kinds of materials new to them, that the road to comprehension is so steep and forbidding that these children will need extra doses of encouragement or what is often called a "supportive educational climate." Particularly is this supposition true if we ask children—as we often should—to make inferences about what is not directly stated in the selection. In responding to any question about his reading, a child must risk the possibility of error. Many good teachers wisely minimize this risk by commending the pupil upon the process in arriving at a conclusion, rather than universally offering approval for correctness of an answer. A pupil who hears frequent judgments as to "this is right" and "that is wrong" may become timorous in venturing any response at all. A more fruitful kind of guidance may well be in such comments as, "Was there something in the story that made you think the man was very old?" or "What was told in the story that made you feel Jim would become Bill's good friend?"

It is apparent that the questions asked, and the context in which children must answer them, can be a fairly serious threat to their self-esteem, thus offering something of a barrier to understanding. A visitor to an elementary classroom, demonstrating to a group of teachers the need to establish rapport and to relate the content to the selection to be read to the pupil's own experience, asked a fourth-grade girl, "Do you have a pet cat or a little kitten at home?"

The little girl answered with devastating directness: "No, I never had a cat. The housing where I live they won't let you have any pets, not a cat or a dog. So I don't never have one."

A visitor, unaware of the community, may perhaps be excused for betraying a child into a public admission of what she must indeed have felt a deprivation, but it is an experience one wishes not to repeat too often. Perhaps if we listened more, and extracted less by way of questioning, our guidance could be more sensitive and more effective.

Teaching Procedures Require Thoughtful Organization

Another way in which we may unwittingly enlarge the dimensions of barriers to comprehension may be through unwise organization of our teaching procedures. It is possible, for example, to plunge into the details of a learning situation before learners are aware of the nature and shape of the task before them. As one observes teachers at work, it becomes increasingly apparent that preparation for a reading experience may be either perfunctory and disconnected or vital, clear, and functionally related to the objectives sought and the procedures followed. For example, a given selection may be enjoyable to a group of readers only if some Spanish words in the story are understood. Knowing in advance what these words mean in this context, how they are like familiar English words, and the special significance these words will have in getting the sequence of the action—all this knowledge helped a small group of rather inept fifth-grade readers to achieve understanding and enjoyment. Other aids included a clear over-view of the likely problems arising for the personages in the story as well as a specific understanding of other useful features of the structure and design of the narrative.

In another group in a fourth-grade classroom, a realization that their oral reading was ineffective stimulated these pupils to plan with their teacher for some specific practice sessions. These children set up objectives for clear, interesting reading in audience situations and practiced until they themselves were satisfied that they had made real progress. In these examples the skill and practice segments of the situation are clearly seen by the learners as related to more remote goals and to a larger pattern of needed skills. Generalizations about locating main ideas, or about the surveying or reviewing of material, or using locational aids are thought of not as ends in themselves but rather as means to reading for understanding. If there is some temptation to say of a pupil "He does very well in dividing words into syllables" rather than thinking of him as a user of these generalizations as a means to more rapid, accurate grasp of meaning, a shift in our organization and emphasis may be indicated.

The Relationship of Reading to Experience Requires Consistent Attention

For many years concern has been expressed for frustrated pupils who attempt to read selections unrelated to their experience and beyond their present level of skill. Yet we are confronted constantly with newly disturbing aspects of this old problem. A few illustrations will make this point clear. A fourth-grade pupil, using oral speech sounds familiar to her, confused the word "left" with "let's" and hence missed completely the meaning of a passage. Confusion is also caused when word endings such as "ed" and "ing" are dropped. One wonders, also, if there is not some confusion as a child translates as he reads, possibly transforming the "he went" that appears in print to a more familiar form "he done gone." Even the delightfully archaic "hit" for "it" may trouble some children, in whose speech it is still a reminder of Elizabethan English. Our thoughtful listening to what pupils say, plus many opportunities to hear and to speak in less familiar patterns, seems essential. Understanding grows through a guided use of language in all areas.

Indeed another persistent problem is that of providing experience in all areas of language—speaking, listening, writing, reading—so that pupils may become increasingly familiar with a wider number of concepts and with the relationships among ideas. Since it is easy to spot details of information in any discussion, pupils are often expected to respond to details. Unfortunately, pupils are less often expected to react to more complex ideas and situations in which inferences and conclusions are to be drawn from clues found in the selection discussed. A sixth-grade class once tried to discover which of three boys described in a story was the oldest. Diligent search of their text and accompanying pictures produced no reliable hint whatever. After the class session was over, a student teacher felt uneasy because "a right answer" could not be found. The pupils, however, were quite rightly satisfied with the conclusion that they had no way of telling the ages of the personages in the story. It is a significant milestone toward competent reading and a high level of comprehension when the learner realizes that there are occasions when facts are not presently available and that there is no "right answer."

Additional Help Is Needed in Making Application to New Situations

Extending understandings grasped through reading to a new context takes the reader into new, but important, aspects of reading skills. Recently I had an opportunity to ask some seventh-grade pupils who were reading at about a fifth- or sixth-grade level to react to a short poem, written in very simple language, which was in effect an extended metaphor. Their answers to some multiple-choice items showed that they had some grasp of the meanings expressed in the poem. A different kind of question, in which they wrote a brief statement of their own immediately after reading the poem, required extending the meaning obtained and applying ideas in a new context. Many responses to this kind of question were often quite without reference to previously indicated understanding of the passage just read. Perhaps these pupils were responding to the most recent segments of their reading, rather than holding on to a thread of thought which needed to be woven into conclusions drawn a few sentences later. The problem is one which I hope to investigate further. If it is true that difficulties of this kind are common, then some specific guidance in such situations may be called for.

It is true, of course, that ideas received through reading are often put to fairly immediate use. One may follow explicit directions or say to oneself, "Oh, yes, that's the way it is. I never understood this before!" In a more complex situation the reader must move out beyond application in the same situation to something new in some way. He may be asked to think: "If this is true in this situation just described, in situation A and for Mr. B. and Mr. C. in the year 1900 what would happen, I wonder, if the same kind of event happened in 1966? What if it happened to Mr. X. and to Mr. Y.? What would be the same? What would be different?" If such a "moving out" in a pupil's thinking about new relationships is a desirable aspect of reading comprehension—and it appears to be an essential aspect of creative thinking—we need to do more than we now may be doing to help pupils achieve it.

Conclusion

Children may be helped to overcome barriers to their comprehension by wise and helpful guidance. If the reader analyzes his own difficulties and makes useful connections between practice for developing skills and the pleasurable rewards of reading, he is likely to read with greater understanding. Teaching procedures that provide support for his efforts and that are carefully organized, tend to give him useful assistance. A pupil's ventures into new areas in interpretation and his risk of defeat as he tries new responses require teachers to give needed encouragement as children use their own initiative and courage in overcoming barriers to comprehension.

Limitations in the Vocabulary of Disadvantaged Children: A Cause for Poor Reading

J. ALLEN FIGUREL*

PSYCHOLOGISTS tell us that one-third of the children from American schools live in "marginal" or "transitional" areas. Many terms have been used to designate these children: underprivileged, culturally disadvantaged, and culturally different.

Many of these children are retarded in reading. Retardation in reading prevents them from securing an adequate education.

Reading retardation has a complexity of causes. Nevertheless, one of the main reasons for such poor results in reading is the meagre experiential background children have had in developing an adequate vocabulary. The limitation in vocabulary prevents the culturally disadvantaged child from reading intelligently the many middle class words which are strange to him verbally and experientially. Language develops with the discovery of reality, and reality in those cases is very limited.

It need not be argued that a knowledge of the vocabulary of culturally disadvantaged children and the areas of experience they represent make a good starting point in the problem of improving the reading of large masses of city children.

How does the vocabulary of culturally disadvantaged children compare with the above figures? The following table gives the results of the study.

Table I

SIZE OF GRADE VOCABULARIES OF CULTURALLY DISADVANTAGED CHILDREN

Grade	Number of Words
Two	1,032
Three	609
Four	505
Five	654
Six	736
All Grades	3,536

Table II

COMPARISON OF THE VOCABULARY OF CULTURALLY DISADVANTAGED CHILDREN WITH THORNDIKE'S ESTIMATES

Grade	Thorndike's Prediction	Vocabulary of Culturally Disadvantaged Children
Two	3,600	1,032
Three	4,500	1,641
Four	5,400	2,146
Five	6,400	2,800
Six	7,500	3,536

A comparison was made of the vocabulary of culturally disadvantaged children with the standard basic word lists. The vocabulary was also analyzed to determine the nature of the words. Space does not permit giving the details here. An analysis of the areas of experience represented by the vocabulary was also made. Only in the areas of school experiences were culturally disadvantaged children comparable with others.

Conclusions

The vocabulary of culturally disadvantaged children is comparatively small. They know approximately 3,500 words, the number that are known by many first and second grade children in higher socio-economic groups. This meagre vocabulary places quite a limitation on their reading, for on the basis of the comparisons made in this investigation, culturally disadvantaged children know, on the average, only every second or third word found in their textbooks. Not knowing every second or third word is a serious handicap and one which precludes very much learning from reading.

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*Improvement of Reading through Classroom Practice, IRA Proceedings, 9, (1964), 161-165.

A comparison of the words in the vocabulary of culturally disadvantaged children with the words in the controlled vocabulary for the middle grades shows that very little effective reading can be expected to be done in the textbooks in use in these grades, for almost all the words in the controlled vocabulary are unknown to culturally disadvantaged children in the various grades.

Less than half of the words in the vocabulary of pre-school children is known by second-grade children in slum areas. Nearly two hundred words in this list do not appear in any grade list of words known by culturally disadvantaged children. This suggests bringing into the activities of boys and girls who live in marginal areas experiences which are represented by the words which are not known.

Common name words, such as *sink, chimney, honey, beef* and *sandwich* are learned by culturally disadvantaged children one or two years later than by other children. Culturally disadvantaged children know proportionately more name words and fewer polysyllabic words than do those that live in privileged areas.

For the purpose of written communication, culturally disadvantaged children have a sufficient vocabulary, for they know almost all the words which make up ninety-five per cent or more of all the words used by an average person. This statement is substantiated by the fact that they know all except ninety-four words of Basic English.

The vocabularies of culturally disadvantaged children reveal a limited experiential background. Although the number of words known in such areas of experience as clothing, eating, housekeeping, and recreation seems large, the number is still very much limited when compared with the terms privileged children know. Only in the area of school experience are culturally disadvantaged children comparable to others. If reading competency is commensurate with one's experience, and much evidence seems to prove that this is true, culturally disadvantaged children, with their limited experiences, can be expected to do very little effective reading in textbooks they now use. To help these children read better, they must be helped to live better, and in this, the teacher has the world at her command.

Promoting Critical Thinking

LILLIAN G. GORDON*

MANY apt definitions of critical thinking are to be found in the literature of reading and thinking. The one accepted for the purpose of this discussion is Russell's definition[1] which describes critical thinking as "the examination of some idea or product in the light of some norm or standard."

The need to teach students to examine ideas and products in the light of norms and standards has always been important, but there is an urgency about it today that cannot be denied. The entire population is being bombarded with ideas and products that demand evaluation.

New ideas, new products, and different points of view will continue to emerge, and the need to evaluate them will increase with the rapidity of change in our society. Before the students in our schools become the lawmakers in the country, either as leaders or as voters for leaders, they must be taught to examine critically what they see, hear, feel, read, and think.

The Role of the Teacher

The school is probably the only agency that can help students to build up critical thinking abilities gradually. While most of them do not learn to master critical thinking by themselves, almost all of them have the ability to think critically. Even the preschool child who hears mother say on the telephone that father is out, when father is sitting in the living room, thinks critically; he evaluates mother's statement in the light of what he knows to be true. Situations arising daily in school should be utilized to foster the development of that ability. Students should be encouraged to question ideas and products, and teachers should make a deliberate effort to organize their teaching procedures in such a way as to demand a high level of interpretation. The natural curiosity and eagerness to learn that children bring to school should be nurtured and maintained with students as they learn to search out and discover for themselves facts and truth. The process of searching and discovery is more important than that which is discovered, and emphasis should be placed on the process of solving problems, rather than on the answers to problems.

The Place of the Reading Program

Since the time in schools is still largely devoted to the use of different reading materials for various purposes, these materials should serve as the foundation upon which to build thinking skills. When those conducting the reading program recognize reading as a thinking process, not just an accumulation of mechanical skills, regular opportunities to promote thinking are provided. Critical thinking, like critical reading, is not to be taught and acquired at any particular level or with any particular material. It should be part of a developmental, sequential, and continuous reading program, in which the emphasis is placed not only on word recognition and literal comprehension, but on the higher levels of comprehension such as interpreting implied ideas, identifying the author's purpose, making judgments, reading not only between the lines but beyond the lines.

Such a reading program is based upon a recognition of the fact that language is not only an instrument of expression, but also an instrument of thought. Jepson[2] says:

> The connection between thought and language is necessarily close. Until a thought is translated into language it re-

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[1] David Russell, *Children's Thinking.* New York: Ginn and Co., 1956

[2] R. W. Jepson, *Clear Thinking.* New York: Longman's Green, 1953.

**Reading and Inquiry, IRA Proceedings, 10,* (1965), 119-121.

> mains vague, nebulous and indeterminate. Language crystallizes it and gives it form and substance. Thus language is an indispensable aid to clear thinking; the very process of having to put our thoughts into speech or writing and the effort it entails in discovering adequate expression for them are of themselves thought clarifiers.

Barriers to Critical Thinking

Language can, however, be one of the major barriers to critical thinking. It is sometimes used to conceal or disguise thought rather than to clarify it, and the glib use of words and terms is frequently mistaken for an accurate knowledge of their meanings and implications. Critical thinking requires an extensive vocabulary and a sensitivity to the subtle meanings of words. The clear and precise use of words is important in the thinking process, and students need to be kept constantly aware of this fact.

Language is not the only barrier to be overcome in promoting critical thinking. Intellectual laziness, in varying degrees, exists among students as well as among adults. Some find it easier to follow the line of least resistance, agreeing with accepted opinions rather than challenging them. The result is blind conformity. Unfortunately, the school program frequently requires only the recall of facts, and does not require that the student put forth effort to compare a variety of authoritative sources before accepting opinions or arriving at conclusions. This practice encourages intellectual laziness and tends to promote the notion that all that is said or written is true. Often, when the complaint is heard that students do not think, close examination of the situation reveals the fact that opportunities for thinking have not been provided.

Many people are so influenced by the society in which they live, that almost unconsciously they develop prejudices about certain issues, usually religious, racial, or class issues. They become so involved emotionally that they cannot be objective. Students must learn to recognize these prejudices in themselves as well as in others and be willing to modify their beliefs in the light of the facts.

Overcoming the Barriers to Critical Thinking

The reading program that recognizes the true nature of language and its fundamental importance in the educative process provides opportunities from the beginning for students to enrich their vocabularies, to use words precisely, and to clarify their thinking as they listen, speak, read, and write. Since there can never be much critical thinking if students are not involved in a lively sharing of ideas, they must be encouraged to discuss what is said or written. From guided discussion emerge hitherto unrecognized problems that establish purposes for further reading, thinking, and discussion. This process leads to a general clarification of issues. Students learn to modify their ideas, to accept or reject the ideas of others, to recognize prejudice in themselves as well as in others, and to sense a need for more knowledge of the subject under discussion. Obviously, you cannot be intelligently critical if you know nothing about the subject. As the teacher listens to, and guides the discussion, she identifies gaps in language, knowledge, and experience that need to be filled in at a later time.

While the reading provides the foundation upon which to build critical thinking, it should be the function of the entire school program to promote it. This is especially true at the junior high school level, where the increasing amount of content material requires language and concept development peculiar to each subject and suggests a shift from emphasis on facts to a greater emphasis on the student's understanding.

Critical Thinking in the Total Curriculum

Fortunately, the richness of content furnishes abundant opportunity for developing habits of critical thinking with respect to every area of the curriculum. Obviously, in mathematics and science, the student can, and must, be encouraged to develop adequate facility with the language of both, if he is to think in either language.

In social studies, critical thinking can be encouraged if the student is asked to collect information from a variety of authoritative sources, selects information relevant to the particular topic, organizes it, and presents a report that is evaluated before it is accepted.

Through reading and discussing literary materials, students can learn to identify, and think about, the motives of the characters, the drives influencing their behavior, and the emotions that affect their actions and decisions. Young people can be helped in this way to achieve the objectivity essential for true critical thinking.

Since newspapers are important factors in the life of the community, students at the junior high level need to become aware of the responsibilities and function of the press. The manner of presentation as well as the presentation itself should be considered. In addition, the editorial policy should be recognized, and both the writers and the readers for whom their writing is intended should be identified. Students should also become interested in why a paper selects certain news items for coverage. A paper that is anti-communist, for example, may take this view because of some religious principle or because of particular political interests.

It is not enough, however, to help students to discover and evaluate ideas in all their subject areas and environment. Every effort must be made to teach them to formulate logical principles and to apply these principles to an understanding of new situations. Such formulations are, of course, highly sophisticated mental operations, and the ability to perform them comes only through unremitting practice.

Summary

Critical thinking is the evaluation of some ideas or product in the light of some norm or standard. It requires an inquiring attitude, knowledge of the subject, application of methods of analysis, and action in the light of the analysis. The foundation upon which to build critical thinking is a language-oriented reading program. The promotion of critical thinking should, however, be the function of the total school, and it can be since there are opportunities in every area of the curriculum for students to practice thinking critically. Let us not be guilty of failing to take advantage of these opportunities.

TEACHING

The authors here speak with authority and give practicable, constructive suggestions for developing comprehension skills. It is shown that the very youngest pupils can be taught to read thoughtfully. The skills to be included are spelled out and ways of building specific abilities are described. (Here the reader may wish to turn to Martha King's article in the last section as her article includes a listing of most of the major comprehension skills.)

Productive Reading-Thinking at the First Grade Level

RUSSELL G. STAUFFER*

THAT THERE is not enough reading for meaning is a canon of contemporary criticism often wearisome in its repetition and often blind in its application. The implication that there can be reading without resultant meaning sets unreasonable limits to the function of reading. It is a half-truth that tends to confuse the unthinking as well as the uninformed.

Possibly the idea that productive reading is a process closely akin to productive thinking has always been held by good teachers. Probably it is a concept held by mature readers as a result of wide experience in reading for many purposes and in different materials. Certainly it is a concept that authorities in reading as well as psychology have always expressed and advocated.

But the thought that productive reading-thinking involving the setting of purposes, reasoning while reading, and evaluation can be done by six-year-olds, or children in first grade, puzzles some and confounds others. Generally, children become lost in the word learning maze of initial reading instruction. Unwarranted attention is often given to memorizing words, to drilling on phonetic skills in isolation, to oral reading and re-reading, and to a telling of the story. Then, too, some teachers are of the opinion that six-year-olds can not think critically and cannot be trained to do so. In fact, the story is told that during the late forties, when the National Council of Teachers of English were drafting the new English curriculum, one college professor of English recommended that nothing be done about critical thinking at the elementary and high-school levels. To think critically, he said, was a skill to be acquired in college.

Although the above is an absurd proposal, it is almost equally as absurd to be of the opinion that six-year-olds cannot be taught to do productive reading. The following illustration of a first-grade group in action should help to dispel such opinions.

In this first-grade classroom the teacher used both a group approach and an individualized approach to differentiated reading instruction. For the group sessions she had identified four groups, with each member of each group at about the same instructional level.

The group in the action described

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*Reading Teacher, 13, (February, 1960), 183-187.

here was the teacher's second group, or, as she put it, her "average readers." Group instruction was being directed in a first-grade basic reader. To be sure that each story was new or unknown to the children, the books were stored in a closet and brought out only during the teacher-directed reading session.

The story for the session was entitled "A Newspaper Helps" and was located in the fourth unit of the book on pages 119-124.* Six new words were introduced in the span of six pages. This made the ratio of new words to running words 1:72. In addition, each new word was introduced in a meaningful and appropriate way to fit the communication demands of the context. Because of these facts, plus the fact that this group had already been taught certain word-attack skills of phonetic and structural analysis, the teacher did not write the new words on the board to be studied before the reading of the story. She wanted the children to meet the six words in the rich content of the story and have them use, if necessary, their word-attack skills under her supervision.

First Purpose-Setting

The teacher directed the group to turn to the Table of Contents and read the name of the story located on page 119. Then she asked, "What do you think will happen in the story?" The results of immediate speculation seemed logically possible. Some of the ideas were: "Perhaps a newspaper is used to train a dog. Maybe a family finds a place to live by using a newspaper. The paper may be used to wrap some toys. Maybe the paper is folded and used as a fly swat." Already interest was running high.

Next, the group was directed to turn to page 119, to study the picture for possible clues, and then close their books. New speculation was adjusted quickly in keeping with the new information provided by the first picture. (The picture showed three boys looking in a puzzled way at a small black dog.) Ideas now given were: "The boys look worried because this is a strange dog. The dog didn't listen to them and they will use a newspaper to train him. The boys are wondering whose dog this is. They want to play ball and the dog gets in their way."

The group was eager to get on with the story to find out whose ideas were right. So the teacher directed them to read only the first page and then to close their books.

The pupil-purpose setting was the first step on the reading-thinking road. They had sized up the picture situation and evaluated the title. Ability to look ahead—to anticipate next steps—is a skill possessed by almost all typical six-year-olds and is used by them constantly in their day-to-day living. What was done here was to provide training in looking ahead in a reading situation. To be able to select and weigh and balance available beginning clues, in terms of ultimate story outcome, represents an important reading-

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*R. G. Stauffer, *et al. Away We Go* (Philadelphia: John C. Winston, 1960).

thinking skill.

It took but a minute or so for all to read the page. Now the teacher observed a key teacher responsibility —she honored the pupil purposes, not by asking questions about the details of the story but by asking "Who was right?" The boy who had proposed that the dog was strange and the boys were worried immediately raised his hand. Then he read orally the lines that proved his point. All agreed, and again a major reading-thinking skill was being refined: knowing whether or not the answer to a question has been found.

Second Purpose-Setting

Another brief speculation session followed after a quick look at the two pictures on the next two facing pages. (One picture showed the boys talking to Mother. The other showed the boys scanning a newspaper.) Ideas now presented were: "Mother tells them to go find the dog's owner. The boys look in the morning paper to see if someone has lost a dog."

Again, reading was done and posture, facial expressions, and occasional audible responses readily showed that the children were reading for meaning.

Checking on their purposes was accomplished by the teacher's initiating question: "Which idea was right?" This time none of the speculations had been completely accurate. The boys, at the mother's suggestion, had run an ad in the paper about the finding of a little black dog.

Third Purpose-Setting

This time the teacher suggested that purposes be set without looking ahead. So, in light of the evidence or information so far accumulated, the children set purposes. Ideas now presented were: that the owner would show up and claim the dog and reward the boys, that the owner might not show up, and that the dog would run away again.

The predictions showed that the pupils were half-way through the story. As they reflected over events to date, reconstructed them, and re-evaluted them, the pupils were putting to work an excellent thinking-learning technique. They were learning the value of reflective judgment as contrasted with naïve and blind plunging ahead. As they read on, it was interesting to note how the pupils read the next two pages and how they examined the pictures. They were searching all sources of information in an effort to find clues to the possible fate of the lost dog.

When all were finished reading, the teacher once more asked, "Which ideas were right this time?" Now the children were a bit puzzled. The two pages had not answered their questions but they had given new information about the dog. This little black dog apparently was a trained dog. He could do tricks.

Fourth Purpose-Setting

Ideas about how the story might end again reflected the degree to which these young minds grasped and evaluated the information so far presented. Because the dog could do tricks, some pupils felt very sure that the owners would be looking for the dog. One boy felt that the dog had learned the tricks on his own because he had always been a runaway dog. Some thought the owners would not turn up because they would have missed seeing the small-town newspaper and would not know that the dog had been found.

"On with the story," said the teacher, "and see who is right." The last picture showed the boys, the mother, the dog, and two strangers. The man seemed to be giving the boys some paper, but not money. The reading was done rapidly.

A check quickly revealed that the pupils who had predicted the owners would show up were right. What they had not anticipated—and this is what held their interest to the end in this well-conceived plot—was that the dog was a circus dog, especially trained to do tricks. Again, lines were read orally to prove points. A short discussion followed on how wisely the boys had acted, and on the use of newspaper ads. All the reading and discussion so far had taken twenty minutes.

The end of the story was a good time to check on concepts and story understandings. Because the story was well written, the pupils could understand and enjoy its development and outcome. Now, at the end, was the time for refinement.

A good story is likely to evoke many ideas and questions which can send the reader beyond the story. When the reading of a story is directed as a reading-thinking process, the readers will invariably be stimulated to seize upon every opportunity to learn more. All this means that going beyond a basic reader story should be a natural and almost an integral part of all group-directed reading.

In Conclusion

Thus, here have been considered some of the steps to productive reading and thinking. This rather detailed description of one directed reading-thinking session should have shown that it is wrong to think that enthusiasm and clear thinking cannot go hand in hand. To the contrary, enthusiasm is indispensable for achieving clear thinking — be the resulting decisions great or small, immediate or remote.

Also shown was the age-old concept that effective skill-training is best accomplished under the watchful eye of an experienced teacher—one who has the skill to direct training as occasion or need demands. A person with such ability must be both resolute and informed.

Shown too was the fact that it is not enough to say that an answer has been found in a story. Proof must be produced. Pupils must learn to support constantly their statements of fact with specific proof. This directed reading activity required such performance.

Some boys and girls perform like some men and women. They are ready to present opinions unsupported by facts. They do this because they are constantly influenced by the beliefs and modes of behavior of the people around them. So, to establish in children the definite habits and emotional tendencies of sound thinking, training must be initiated early and must be vigorously continued.

It is especially important that those who concern themselves with the instruction of others be clear about what they are doing. As long as pupils can be helped in a firsthand, face-to-face situation, little difficulty should arise in promoting the habits of sound productive reading.

The roots of reading behavior must be very deep in the tradition of sound thinking, if boys and girls are to mature as rational individuals. A rational person is one who seeks answers, requires proof, and is aware that reasonable persons could have different beliefs. Persons so prepared can be deliberate and tolerant in their use of ideas. Rationality gives them, in turn, an authority and assurance that come only from knowing and doing.

Major types of thinking as declared by Guilford elsewhere in this issue of THE READING TEACHER are divergent production, convergent the nature of the material. It will also depend upon skillful questioning or directing of thinking on the part of the teacher. To this is added another thought: it will depend upon the degree to which pupils see clearly and declare openly purposes and problems.

The reading-thinking lesson described in this article and the supporting discussion should then, to a degree, provide answers for Guilford's four questions: Do the material and the teaching stir the imagination of the reader, and do they leave something for the reader to do? Do they open up alternative, inviting avenues that would suggest divergent thinking? Do they carry the reader logically forward step by step to an inevitable conclusion? And do they challenge beliefs and call for proof of facts and arguments?

Comprehension Skills

OLIVE S. NILES*

MIDDLE - OF - THE - ROAD reading teachers seem universally to agree that teaching students to read with comprehension is their major responsibility. Colleagues to the far right sometimes appear to leave the concept of comprehension out of their definition of reading. They talk as if they equated word pronunciation with reading. If this equation existed, phonics might indeed be the panacea for all ills. Colleagues on the far left, on the other hand, among them those who favor the more extreme forms of "individualized reading," often exhibit surprising faith that ability to comprehend will appear somehow with a minimum of specific teaching of comprehension skills.

Lists of comprehension skills which appear in professional books on the teaching of reading often seem formidable to teachers, who wonder how they can teach all the comprehension skills and also the word recognition and word meaning skills, the locational skills, the oral reading skills, and perhaps others. The question arises: Is it really necessary to teach all these skills separately? Are they truly basic or are they, perhaps, at least one step removed from those abilities, probably much fewer in number, which are truly fundamental to the process of comprehension?

The number of skills to be taught could probably be reduced if teachers got closer to an understanding of what is essential. Also, the time and effort expended in teaching skills would have a greater effect upon the student's power to read. In the writer's opinion, there are three abilities which clearly differentiate between the reader who comprehends well and the one who does not.

The first of these abilities is the power to find and understand thought relationships: in single sentences, in paragraphs, and in selections of varying lengths. Ideas are related to each other in many ways. Here is a simple example of the most common kind of thought relationship:

> During our visit to the museum, we saw the first Stars and Stripes ever carried in battle; after that we enjoyed a collection of old silverware, later wandered into the room filled with Indian relics, and finally found ourselves absorbed in a display of old wedding gowns.

The parts of this sentence, obviously, are related to each other chronologically. We follow the trip through the museum in the time order in which the rooms were visited.

Now examine the same sentence parts arranged in a different way:

> During our visit to the museum, we saw a collection of old silverware, an absorb-

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*From an address delivered by the author at the Fourth Annual Reading Conference at Syracuse University in June 1962, to be published in the Conference Proceedings (Vol. 3, *The Treatment of Reading Problems*).

**The Reading Teacher, 17,* (September 1963), 2-7.

> ing display of old-fashioned wedding gowns, a room filled with Indian relics, and the first Stars and Stripes ever carried in battle.

This sentence tells less than the preceding one. We know what the visitor saw, but we cannot follow him from room to room. The relationship present among the parts of this second sentence is a simple listing.

Here is another sentence:

> During our visit to the museum, we enjoyed seeing the first Stars and Stripes ever carried in battle and the absorbing display of old-fashioned wedding gowns much more than we did the room filled with Indian relics and the collection of old silverware.

Now the ideas have a comparison-contrast relationship. The things the author saw have fallen into two groups: two displays which he enjoyed, two others he liked much less. An important *additional* meaning has been added because the relationship of the parts of the sentence is different.

Once more, observe the same facts but in a fourth relationship:

> Because, on our visit to the museum, we had seen the first Stars and Stripes ever carried in battle, a room full of Indian relics, a display of old silverware, and a collection of old-fashioned wedding gowns, we were able to present a successful class program in which we compared relics of the past with their modern equivalents.

In this last sentence, we have a cause-effect relationship. The experiences of the museum visit have produced an effect: a successful class program.

These four kinds of thought relationship—time, simple listing, comparison-contrast, and cause-effect, plus others—occur in a great many combinations, some of them complex. The ability to observe and to use these relationships seems to be one of the basic comprehension skills.

The ability to set specific purposes in reading is a second important ability or skill. William G. Perry has reported a study done with fifteen hundred Harvard and Radcliffe freshmen to determine their habits of study when presented with a typical chapter in a history text.* In presenting his results, Perry has this to say:

> We asked anyone who could do so to write a short statement about what the chapter was all about. The number who were able to tell us . . . was just one in a hundred-fifteen. As a demonstration of obedient purposelessness in the reading of 99% of freshmen we found this impressive . . . after twelve years of reading homework assignments in school they had all settled into the habit of leaving the point of it all to someone else.

These same freshmen were able to do very well on a multiple-choice test based on the details of the material they had read.

If this purposelessness in study exists among students like those at Harvard, what must be the case with others less able? It might be argued that the moral of the tale is that teachers should give better assignments in which they *tell* students what to look for. But it would seem more important to suggest that by the time young people are freshmen at Harvard, it is high time they know how to set their own purposes. It is obvious that Perry questions whether the students he tested had any real

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*William G. Perry, Jr., "Students' Use and Misuse of Reading Skills: A Report to the Faculty," *Harvard Educational Review*, Vol. 29, No. 3, Summer, 1959.

comprehension at all. They could answer multiple-choice questions, but they failed to get, as he says, the "point of it all."

Suppose, for example, that a student is studying a chapter about life on the Southern plantations. The inefficient reader plods straight through the material, often with wandering attention because his goal is only to "read the lesson." Contrast the careful attention to detail, the search for visual imagery of the student who studies the same chapter in order to make a drawing of the plantation grounds. Contrast again the procedures of the student who wants to compare the way of life of the Southern plantation with that in colonial New England. Or, again, the method used by a student whose responsibility is to report on one very specific topic: the duties of the mistress of the plantation. This last student, if he is reading efficiently, will skim rapidly through the chapter until he comes to a paragraph which seems to have a bearing on his special topic, then settle down to read carefully for detail. The student who thus reads with purpose, and its corollary flexibility, has comprehension impossible to the student who merely "reads."

A third basic comprehension skill is the ability to make full use of previous learning in attacking new material. It is "reading readiness" in an extended form.

Jokes sometimes make an adult realize how a child must feel when he has to read something for which he does not have the requisite readiness. The following is supposed to be a story told by Helen Taft Manning about her father. When Taft was recuperating from a spell of illness, he wired a friend of his recovery and remarked that he had just taken a long horseback ride. The friend wired in reply, "How is the horse?"

Whether the reader sees anything funny at all in this story depends entirely upon whether he happens to remember from his previous reading or from pictures he may have seen that Taft was one of the heftiest of our presidents.

It is partly a matter of chance whether a reader happens to have a fact like this stored up in his head, but there is more to it than chance. Many students actually have the background information for full comprehension but fail to realize that they have it and to use it. Associational reading—the act of drawing upon all one has experienced and read to enrich what he is currently reading—is a skill which can be taught.

To summarize to this point: If an analysis is made of what lies at the foundation of comprehension, there seem to be at least three basic skills, (1) the ability to observe and use the varied relationships of ideas, (2) the ability to read with adjustment to conscious purpose, and (3) the ability to make full use of the backlog of real and vicarious experience which almost every reader possesses.

These basic skills are developed and strengthened in part by the kind of questioning which teachers use. Questions must be of the type which clarify thought relationships expressed in the material and which bring into focus meaningful associations with previous reading and experiences. "Thought" questions can turn a superficial test of comprehension into a learning experience.

Suppose, for example, that students have read an account of the Olympic Games. It is obvious that the first and last in the following set of four questions will make pupils use their comprehension skills, while the second and third will merely test their ability to skim or, if the exercise is unaided recall, to remember a couple of facts:

1. Why do the Olympic Games today feature a marathon race?
2. Who suggested that a marathon be added to the Olympics?
3. What is the official distance of the modern marathon?
4. Does anyone know of a famous American marathon race? Can you tell about it?

The kind of question is important. So, also, is the timing of the questions. Most questions should precede reading rather than follow it. If students knew *before* they read about the Olympics that they were to look for the cause-effect relationship required in question 1 above and that they should be making the associations with previous knowledge called for in question 4, they would read the account with better comprehension because the questions would guide their reading. Questions asked *before* help students set purposes; questions asked *after* may do little but test.

A second kind of guidance which helps students learn basic comprehension skills involves the application of the directed-reading-lesson pattern of teaching to lessons in the curricular areas such as social studies, science, and literature. Teachers in elementary schools are very familiar with the directed reading lesson, which appears so often in the manuals of basal readers. Applied to a lesson in one of the content areas, it starts with the development of background and purpose. The teacher builds readiness for the new lesson by introducing new vocabulary and concepts and by reviewing materials from previous lessons or from the students' experiences to show them how the new content connects with the old. He also helps them set purposes for study. After skimming through the pages of the lesson, looking at pictures, reading headings, reviewing what they already know about the subject, students are able to answer questions like these:

Is this a lesson we can read rapidly or must we study it carefully? Why?

What are some of the things we should try to find out in this lesson? What questions can we anticipate *before* we read?

How can we use this new information?

It is during this first part of the directed lesson that students learn one of the basic skills: how to set purposes for reading.

The second step, silent reading and study, will be effective in proportion to the skill and thoroughness with which students are guided during the first step.

The third part of the lesson is the follow-up, usually some kind of questioning or testing. The type of questions and discussion the teacher uses determines how much students improve in their understanding of thought relationships and how much skill they acquire in making associations between what they are presently studying and the many other things they know—in fact, whether or not they get the "point of it all." Thus two more of the basic skills receive constant practice if the directed-reading-lesson pattern is used.

It is the writer's experience that some secondary teachers react negatively to this procedure. They may feel that it helps the student too much. He ought to be more on his own. The truth is that most students, even some very able ones, are not ready to study alone by the time they enter secondary school; we should be well content if they have acquired complete independence by the time they are ready for graduation. Skillful teachers know how to allow students to take more and more responsibility until one day, for most students not until some time late in senior high school, it is time to introduce SQ3R.* SQ3R is a grown-up directed reading lesson. The steps are virtually the same, but now the student is on his own. That Robinson's well-known technique is not more successful and popular stems from the fact that they have been expected to learn and use it before they are ready.

Teachers need to know what materials are available with which to help students learn comprehension skills. Many reading texts and workbooks have been written, some of them very useful, though, as has been implied earlier, the tendency has probably been to fragmentize the skills and perhaps to confuse both teachers and students by presenting too many *different* skills to teach and learn. Many of the exercises are tests of the application of the skills rather than devices for teaching them. Too often, they consist merely of passages to read followed by questions for students to answer. It is the unusual practice exercise which really shows the student how to see relationships, set purposes, and make associations.

Probably the very best materials for teaching comprehension skills are the regular textbooks in social studies, science, and literature. Because the student knows that the content of these books is important to him, he approaches them with a very different attitude from that with which he does a practice exercise in a workbook. He welcomes the teacher's help in seeing relationships and making associations which guide him in his task of understanding and remembering. Setting purposes for study makes sense to him. Every lesson in every textbook is a potential source for the best teaching of reading skills. Few secondary teachers seem to realize this. They are always searching for something different — something "special." Or, on the other hand, they make the assumption that the mere act of assigning reading in a textbook will insure growth in read-

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*Francis P. Robinson, *Effective Study*, Revised Edition (New York: Harper, 1961).

ing skill. Assigning is not synonymous with teaching. Only when the majority of teachers in secondary schools realize that purposeful teaching of reading skills is necessary in the everyday work of the content fields will the "reading problem" be solved.

What role does library or "individualized" reading have in this process of building comprehension skills? A very important one, but *not* the kind of role which most enthusiasts for "individualized reading" seem to visualize. Every bit of reading which a person ever does is a potential source of background understanding for all the reading he will do in the future. "Reading maketh a full man," said Francis Bacon, and he must have meant full of ideas, full of understandings, full of the background for rich comprehension. Any reader's experience can make this clear. He chooses a book or article on some subject with which he is familiar and reads easily with full and deep comprehension.

Contrast this experience with what happens when a reader undertakes to read a book in a field in which he has had no background of experience or previous reading. He can make no associations; he probably has no particular purpose except the very general one of getting some ideas about this new field; he misses many of the relationships which are obvious to the sophisticated reader in the field.

Here, then, is the reason why a broad program of individualized or library reading is essential to development of comprehension skills, not that it is likely, as some authorities have claimed, that most teachers will be able to do a good job of teaching the skills as a part of the individualized program itself. Rather, through the reading of many books, children acquire the understanding and the background which make the teaching of full comprehension skills possible.

If the skills described here are accepted as fundamental to good reading, teachers must make sure that students themselves understand and accept them. Practice of a skill without the student's understanding of what and why he is practicing leads to success in only a hit-or-miss fashion. Strong motivation, so necessary in learning any skill, springs from two main sources: specific evidence of progress in learning the skill and proof of its practical application. The more teachers share their own purposes and understanding with their students, the more likelihood of success in their teaching.

Clustering Comprehension Skills to Solve Problems

ALTHEA BEERY*

IMPLICIT IN THE WORDING of this topic are several assumptions: 1) that elementary children can solve problems and that it is desirable for them to have training in doing so; 2) that reading will help in children's inquiry; 3) that comprehension skills in reading are necessary in this quest; and 4) that these skills are not separate and disparate but tend to cluster around related skills. Let's examine these assumptions for a moment.

First Assumption: Elementary children can solve and should have training in solving problems. Those of us who have worked with children need no further evidence that children *can* attack problems and that, within the limits of their experience and a challenging situation, they enjoy the opportunity with considerable success. Research backs this up (*17, 22*). In fact, the characteristics and attitudes favorable toward inquiry can be developed in quite young children. Banta (*2*) has built and is norming a test (CATB) for children from three-to-six years of age that measures the following characteristics which he considers significant for problem solving and believes to be amenable to training: curiosity, exploratory behavior, persistence, resistance to distraction, control of impulse, reflectivity, analytic perceptual processes, and innovative behavior.

Second Assumption: Reading helps in children's inquiry. Provided that children have the requisite literacy skills, reading is an important tool which children use in problem solving, whenever their search extends beyond their previous experiences or one immediately at hand, including observation or inquiry of adults or other children (*21, 26*). How limited, indeed, their search for answers to their problems would be without access to the printed page.

Third Assumption: Comprehension skills are necessary for solving problems. Children use a great variety of comprehension skills when they read to find answers to questions, including reading for general ideas, for significant details, for the author's plan of development, to summarize, to judge or evaluate, to identify possible solutions and test them out, to use reference skills, to get the literal meaning of a sentence or paragraph, etc.

Fifty years ago Thorndike (*28*), from a study of errors which elementary school children made in reading single paragraphs, concluded that reading a single paragraph with understanding involves many elements of thought, including the weighing of words in terms of the context, the organization of each element in its proper relation to others, the selection of certain connotations of words, and the rejection of others. He said that in effective reading the mind selects, softens, emphasizes, correlates, and organizes—all under the influence of the right mental set or perspective. He compared the processes required in comprehending a paragraph to those of solving a problem in mathematics.

Fourth Assumption: Comprehension skills are not used separately but tend to cluster. Fortunately for children and teachers alike, these skills can be grouped around basic steps involved in problem solving. They do not need to be taught in isolation. In fact, for the most part, they should be developed together. A flexible reader shifts from

**Forging Ahead in Reading, IRA Proceedings, 12,* (1967), 109-115.

one skill to another as he gains insight into the nature of the problem, the difficulty of the reading matter, and its development by the author and as he develops or rejects "hunches" he has concerning the best solution. Not only does the understanding of what is read involve many of the higher mental processes it also involves them in close conjunction with one another. As the situation demands, we analyze, organize, criticize, reject, reason, and judge with one process merging imperceptively into another and employing the appropriate reading or study skills.

What problem solving involves

Where does problem solving fit into all this? Reading to solve problems is never a simple form of comprehension. It involves many of the skills needed for critical reading. Indeed, problem solving *is* a form of critical reading although it may impose more restrictions than some other types of careful reading. Dale (*5*) gave *problem centered* as a characteristic of critical reading.

The essential steps in problem solving have been listed in different ways by authorities in reading and psychology. In this article, they have been classified under those centering around the problem itself, locational skills, comprehension of the printed page, organizational skills, evaluation of materials in relation to the problem, and finally, application of findings so that attitudes, values, and behavior are changed.

The problem situation

Reading for problem solving emphasizes the *purpose,* in this case the problem to be answered. Whether the problem originates with the introductory material in the text, with the teacher as an assignment, by the class setting the problem, or even with an individual pupil himself is not crucial, so long as the child accepts the problem as his own. The clarification of the problem may include exploratory reading and class discussion or some other method of sharpening so that the direction of the search is clearly defined.

If the solution of a problem is to call forth effective reading, the problem or purpose must have relevance to the pupil and his interests. Roma Gans (*9*) in a landmark study discovered that high achievement on a standard test is no guarantee that the pupil has the ability to reject material which does not contribute information on a selected topic. It should be equally clear that the problem should not be so simple as to require no thought or investigation nor yet so complex that it cannot be truly understood; nor should the reading materials and thought processes involved be too complex for him to handle. If reading is to be a part of problem solving, there must be appropriate material available.

Location of suitable reading materials

In the early elementary grades, guidance may well be given in a group situation with children reading a given selection in search of pertinent facts. Or, following the reading of the selection, the group may discuss whether the facts in the article supported or contradicted information gleaned from a previous selection.

For a successful quest, a child must have at his command a variety of reference skills such as using a card index in the library, a dictionary, an encyclopedia, chapter headings, side headings, and the index of a book. None of these abilities is spontaneously acquired. On the other hand, neither does each of them have to be taught meticulously and sequentially to every child in every class. Needed, of course, is a teacher who is adept at diagnosing the level which different pupils have attained in these skills and at knowing when to give guidance in a particular skill to an individual, a small group, or even the entire class.

Comprehension of material read

In the first place, comprehension in any real sense involves the ability to recognize words and attach meanings to them in relation to other words and their function in an English sentence. The richer the word meanings, the more likely that full comprehension will be achieved.

Except for a small minority who would *limit* the term "reading" to simple decoding of letters to sounds, there is general agreement that reading involves getting information from the printed page. Many persons call this "literal comprehension." Edgar Dale (*4*) calls it "reading the lines." A few writers would also include under literal comprehension some elements of the higher thought processes, such as seeing the relationship between ideas and sensing the purpose which the writer had in mind. Constance McCullough (*15*), in an article in a recent issue of *Elementary English,* points out how necessary to even literal comprehension is the knowledge of our language and how it works, i.e., *linguistics.* She illustrates with the following sentence: "In . . . its . . . hose-like . . . gray . . . trunk . . . the . . . little . . . figure . . . on . . . the . . . matchbox . . . carried . . . a . . . Republican . . . banner." In her own inimitable way she gives the steps which the listener or reader might take in understanding this sentence—cumulative, tentative, revised steps with later words in the sentence modifying or expanding earlier meanings. The example illustrates that the reader leans heavily, although often unconsciously, on his knowledge of our language and how it patterns itself.

Organization of materials

Too many children read along absorbing the ideas as they appear without building mentally an outline of the selection. Studies show that children tend to read all material at the same rate, regardless of their purpose of the nature of the material itself (*6, 12*). Certainly, as elementary teachers, we are responsible for helping children decide whether a particular selection should be scanned rapidly merely to locate material which is important in the solution of a given problem or should be read more carefully for pertinent matter. At the same time children must carry in their minds some feeling of where this point fits into the general problem. At first this activity can probably best be done as we guide a group of children in reading a common selection. Later they should be responsible for the same activity when reading or studying independently. Certainly by the end of the elementary school at least the better pupils should be able to organize the information which they have obtained from several sources without duplicating ideas.

Evaluation of materials read

In a third-grade-class discussion about wild animals, one child said in response to another's statements, "But that isn't a *fact.* I read something different in another book." This remark led naturally to a discussion of which author was better qualified to make such a statement and to a comparison of the copyright dates of the two books. Further investigation involved the use of additional books and encyclopedia and included an interview with the director of the local zoo. Of course, pupils do not always need to go this far in deciding between fact and opinion.

In evaluating, the reader must constantly check the statements of the author against what he has learned from experience or other reading. As he reads critically, he weighs what the author said and challenges his ideas. He notes whether the author is making sweeping generalities which he does not back up with sufficient facts or whether he uses propaganda devices. The reader follows the author's line of reasoning and accepts or rejects his conclusions. He asks whether the material is written from a biased point of view. Studies have shown that young people color what they read by their own attitudes and biases (*3, 11, 16, 18*). Even so do we as adults. The least we can do is to be on guard against letting prejudice color our own reading and to be committed to giving pupils opportunities to weigh what they read or hear reported on the scales of objectivity in an honest search for truth.

Application

When children are reading to solve a problem, they test what they have read by checking whether they have solved the problem they set for themselves. Young children are tempted to accept the first solution that they find. Older boys and girls are increasingly able to hold hypotheses tentatively and to test them more logically. Even when they have reached an apparently satisfactory solution, they learn to limit it by a statement such as, "This seems to be the answer. . . ," *or* "As far as we can find out, the solution seems to be. . . ." Gray (*10*), Gans (*8*), and others stress the fact that reading should make a difference in attitudes, values, and behavior. When children read wisely and thoughtfully and reach a conclusion, they must learn to incorporate it into their attitudes and values, contingent upon subsequent experience and evidence from further reading. Too few of us act on the basis of what we have learned from our reading. We should teach children to stand up and be counted when a controversial problem they have studied is under discussion. Further, reading should influence what children *do*. For example, it is of little use for a child to learn how bacteria is spread if he continues to be negligent in personal cleanliness, the handling of food, and the like.

Problem solving related to subject fields

Whatever the content field in which reading is done to solve problems, it will require certain comprehension skills. Examples are recognizing and understanding the general and technical vocabulary; getting the sense of the material; evaluating it in the light of the purpose or problem, such as judging the relevance and worth of the ideas; and seeing the relationships among ideas.

Granted that there are comprehension skills common to all content areas, there is still variation from field to field in the skills to be emphasized. The nature of the reading material and its function tend to differ from subject to subject, as Nila B. Smith and others have pointed out (*23, 24*).

Science and arithmetic

Science and arithmetic texts are typically compact in form with a rather heavy burden of technical terms and with precise, sequential steps to be followed. Usually a varying but slow rate is required (*7*).

Social studies

Social studies materials can often be read at a faster pace, but not always. Frequently, the pupil must interrupt his reading to study a picture, a graph, a chart, or a map. Cause and effect, especially in historical writing, must be traced. Here, too, authenticity is important (*14, 20*).

Children's literature

We are accustomed to think of critical, evaluative reading in relation to arithmetic, science, and social studies—the so-called content fields. Recently, increased emphasis has been placed on analysis and a more probing interpretation of literature by children. Some of us have feared that this emphasis might result in lessening children's love for good stories and books, if such analysis is within their powers. Evidence is accumulating, however, that with careful selection of materials and wise guidance elementary children can learn to use the problem solving approach in evaluating materials: comparing characters in two books with similar themes, tracing the development of plot and character, and reacting to the quality of a selection. Children seem to enjoy savoring the appropriate word and the vivid description and examining the point of view of the author. All this without lessening their competence in reading and at the same time increasing the range and amount of voluntary reading! An interesting study has been in progress at Ohio State University under a grant from the U.S. Office of Education (*13, 29, 31*). In fact, this study group has developed and normed a test on the critical reading of literature. The study was a comprehensive one which included control groups and guided classroom observation. To members, evaluation of literature to be valid must be done in accordance with criteria, hopefully criteria which the children have helped to set up.

Children compared Madeline, quite a character but always the same, with *Crow Boy* who changes believably into a more mature yet still shy boy. They learned how to identify realistic *vs.* imaginative roles. They found that trying their hands at writing their own modern folk tales or fables enhanced their ability to discriminate. Such problems as why the author chose to write a story from a given point of view proved interesting and profitable.

Van Gilder (*30*) found that the differences in the skills required in various fields lie not so much in the materials themselves as in the type of thinking required. He rejects the notion that the reading act can be packaged, parceled, or isolated into separate compartments. The teacher not specifically charged with the development of reading power may take comfort from Artley's (*1*) statement that the teacher need only ask himself, "What competencies must my students have to carry out the learning tasks in this course as I teach it?"—and then, presumably, help students build the competencies when lacking. We would hope that the tasks set would frequently be problem solving in nature.

Inquiry as an individual matter

Suchman (*27*) defines inquiry as learning that is initiated and controlled by the learner himself as a means of expanding his own understanding. He believes that the more active, autonomous, and responsible the learner becomes for decisions regarding the collection and interpretation of information, the more meaningful the learning and the better motivated the pupil. Stauffer (*25*) also distinguishes between group and individual inquiry.

Conclusion

In summary, can children in the elementary grades be taught to use reading and other modes of inquiry to solve problems? The answer to this question is affirmative (*19*)—granted that young children, as indeed any of us, cannot think beyond the acquired experiential background and that they do not always have the verbal skills with which to express their ideas; their thinking nevertheless, does not vary in kind from that of adults.

Problem solving skills are not limited to reading. If we wish children to use these skills when they do read, we must capitalize on every opportunity for them to develop a spirit of inquiry through manipulation, observation, conversation, and discussion. Situations throughout the school day and in out-of-school life give countless opportunities for children to practice the skills involved in critical thinking. As adults, we must permit differing opinions and cherish a questioning attitude.

A recent convention of this Association was centered around the theme "Reading and Inquiry." *The Annual Proceedings,* issues of *The Reading Teacher,* and other IRA publications, contain numerous articles related to critical, discriminative reading, many with practical suggestions for classroom procedures. Let us apply what we have read and what our experience has taught us as we guide children's reading in the classroom. If we do, in addition to *who, what,* and *when* questions, we will add ones which ask *why* or *how.* We will release imaginations as we give such leads as *I wonder why. . . ? What if . . . had not finished his job?* Above all, we will strive to create an atmosphere in which "reading between the lines" and "reading beyond the lines" (*4*) are taken for granted, a climate in which children's ideas are encouraged and examined. In these ways we make reading and all learning an adventure which leads to lifetime commitment to inquiry.

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The Teacher's Task in the Development of Thinking

IRVING LORGE*

IN ARRIVING at a definition or conceptualization of thinking I tried to list as many verbs about thinking and thought as I could. This list was supplemented by an active search for other verbs which should be added to fill out my working definition of thinking. The list contained forty-nine verbs. The next step was to try to bring together verbs that seemed to have common elements, and, then, to organize the sets in a sequence. My grouping may not be yours—but it may suggest a process by which you can synthesize your own categories and your own sequences. The content analysis comprised twenty sub-clusters as follows:

List A

attend orient
observe regard
relate recall associate
abstract conceive conceptualize
generalize
comprehend understand
review reorganize
know believe
evaluate appreciate

List B

concentrate
seek search
ascertain analyze
deliberate contemplate
  ponder meditate
speculate consider guess imagine
judge reason surmise infer
  hypothesize deduce
restructure plan
solve discover
verify decide conclude confirm
act resolve

The two lists give some impression of the complexity of the thinking process. The act of thinking, indeed, is more complicated than the verbs in the twenty sub-clusters. Nevertheless, the classification suggests a comprehensive structure for the behaviors subsumed under the verb *think*.

For me, two large blocks of ideas emerged to define thinking: first, in List A, the sequence represents the behaviors exhibited in learning for mastery; and second, List B shows the sequence of behaviors involved in solving problems, coming to decisions, in inventing, and in creating.

Learning and thinking are interrelated. The verbs in List A seem to parallel in sequence those in List B, although the emphases and goals differ. In learning for mastery, the steps begin with attending, and continue with observing and regarding, utilizing past knowledge and experience in recall, and relating the common elements through to the active processes of concept-formation and generalizing, to the important phases of comprehending and understanding. In the learning sequence, viewing the materials and skills in new ways will deepen knowledge and belief in terms of evaluation and appreciation—the genuine learning of the philosophers.

**The Reading Teacher, 13,* (February 1960), 170-175.

List B usually implies an obstacle that has to be overcome. The list suggests Dewey's famous five steps: experiencing a felt difficulty, locating and defining the difficulty, evolving suggestions for the solution, reasoning about possible outcomes for the solution, and, on verifying the solution in thought, concluding and taking action.

The range of terms related to the act of thinking gives ample evidence of the great variety of behaviors involved in thinking. In addition, contemplation of the terms serves to emphasize the importance for us in understanding what a child, or a teacher, means by thinking. The child who is attending to what his neighbor is doing, or who is trying to recall the number of products that can be made from coal, or who is contemplating in retrospect the swimming test he passed last summer can say that he is thinking—and he is! Many teachers, of course, have an expectation that thinking usually means the solving of a problem in arithmetic, or the suggesting of the reasons why cotton is produced in California or beef cattle are raised in Florida, or the consecutive steps in writing a composition or creating a poem.

Thinking involves all these—and much more. Teachers must appreciate that the behaviors involved in the acquisition of an idea, the recognition of similarity or difference, or the deepening of a meaning are as much thinking as are the behaviors in solving a puzzle, planning for a picnic, or discovering a new process in chemistry. The implied gradient, of course, suggests that all of us think at different levels at different times. Some of us become aware of a new fact and try to fit it into our store of knowledge; and the same person may also be working out a procedure for simplifying the recording of grades, the giving of assignments, or the staging of a play.

Thinking, however, must be learned — and in the learning, the consequences of successful thinking must be satisfying. Thinking always involves some activity on the part of the thinker, whether it be recalling, or getting at the principles, or whether it be reorganizing material or developing a new methodology. Thinking can be taught by stimulating the learner to overcome obstacles within his intellectual range at his developmental stage and his intellectual level.

In teaching the child to think, the problem or task should be difficult enough to stimulate the learner—but not so difficult as to frustrate the child. Fortunately, the teacher can help the child by providing cues, hints, suggestions, and clues for the solution of the problem. In textbooks in arithmetic and algebra, authors usually provide hints or suggestions. Sometimes they provide the answer so that the learner may verify his thinking and obtain the satisfaction of solving the problem. Thinking and reasoning can occur in any subject or skill, in school and outside. Thinking requires the rearrangement of ideas, principles, and skills in finding the path from what is known to what is to be discovered. Teachers not only must encourage thinking, but, more important, they must teach thinking as an active process not only in every school period but also on the playing field and in the home.

Basically, the teacher has the responsibility of giving each learner the attitude that he can grow by giving thought to his life—by thinking and reasoning about his experiences, applying his knowledge to new situations. Every subject and every class can provide the stimulation for thinking and the satisfaction of solution.

The teacher can guide the learner's thinking about any problem by suggesting, through questions and by hints, the need to clarify the problem, to seek parallels, to open new vistas. Since much of the child's learning comes either through reading or listening, the teacher can help the child appreciate the important steps in thinking as they apply to his reading of a specific passage. Below is a passage from one of my unpublished reading tests. The teacher may suggest some questions which not only would motivate the reading but which might also suggest possible answers that would involve critical thinking. For example, the teacher may ask, "What is the passage all about?" "What was the influence of standing armies on the manufacture of clothing?" "What would be possible actions of a union if somebody invented a way of making something quicker or better?" Here is the passage:

"The first ready-made clothing establishments were set up for the manufacture of uniforms, the need for which arose with the coming of standing armies. After the Thirty Years War, Austria, for instance, maintained a standing army of 33,000 men. The uniforms were tailored partly in regimental workshops, partly in state or private factories, partly even in prisons and penitentiaries. The large number of measurements made by the military tailors enabled them to establish standard dimensions, which were utilized to produce for stock.

"The first large firm producing ready-mades for civilian needs was founded by Pierre Parissot in Paris in 1824. This was situated near the Pont Neuf, one of the busiest bridges across the Seine, and also near the flower market, hence the name: 'La Belle Jardiniere.'

"Parissot, who sold cloth and haberdashery, aimed at the manufacture of plain men's clothes designed to be cheaper than made-to-measure goods and little more expensive than second-hand apparel. As the handicraft tailors refused to work for him, Parissot was forced to have his first trousers and jackets sewn in prison workshops. By the end of 1824 he already had a complete line of ordinary working clothes for men. They sold so fast that he was hardly able to satisfy demand, and it was at this point that the master tailors decided to work under him. Parissot's small shop soon proved too small for the business. In 1830 he bought up the neighboring houses and in 1854 added a further block of twenty-five existing buildings. All his productions were hand-sewn and about half of the output was destined for the provinces and for export. Parissot was the first manufacturer to charge a fixed and clearly marked price for his goods. Also, he demanded cash payment, whereas previously prices were arrived at by bargaining with customers, who also were allowed credit. About 1850 the working capital of the firm was three million francs, a very considerable sum for those days. By that time Parissot also had branches in the provinces."

After the reading, the teacher could ask questions like the following: (1) What would be a good title for this passage? (2) Around 1820 how did a workingman get, or where did he buy, his work clothes? (3) Why was it that dealing in second-hand clothing was an important business in the 1700's and 1800's? (4) What is the value in "standardizing measurements"? Can you give examples that would apply today? (5) What invention was needed to speed and reduce the cost of making clothes? (6) Why was this passage written? (7) How can you find out whether the author was accurate and fair?

The questions are directed to provide a scheme by which the reader and learner can think with text materials. Indeed, the formulation of the questions parallels the analysis of any communication: Who says what to whom via what channels for what purpose and with what effect?

Basically, the questions are graded. The first few are designed to ascertain whether the child understands the material generally, e.g., author's main point or conclusion, general idea, details that support or lead to the conclusion. The second sort of questions are directed to relating the child's previous learnings and experiences to the problem, e.g., Are there situations now existing like this? Can any of the processes and conclusions be applied today in other areas? Can you predict what happened after this event? Are there any of the consequences still to be found?

A third set of questions could be directed to implications from the passage, e.g., Does this passage give any understanding of the prejudices of people? Why would people differ about the relative advantages of these ideas or this invention or this process? What values do you see in getting at the history of an idea?

A fourth set of questions might be directed toward formulating of hypotheses, e.g., Why did this event take place? How can you account for it?

The teacher's task in the development of thinking is important and significant. The steps must, by suggesting, hinting, or questioning, lead the learner through the phases of understanding the problem, suggesting hypotheses or reasons for the existence of the problem, and formulating hypotheses for the solution of the problem. Here the teacher can help the learner by asking him to formulate questions. Good questioning is good hypothesis formulation. The learners can be helped by being asked to formulate questions seeking additional information or inquiring about motives or prejudices or special pleading.

The art of questioning can be directed toward seeing similarities or differences (concept formation), or seeing common elements among concepts (generalization), or recognizing the limitations or advantages (evaluation). Questions can be formulated toward seeing sequences (structure and restructure), toward evidence and proof (verification). Indeed, each line of verbs in Lists A and B should suggest the direction of the thinking-learning process.

The development of thinking in pupils is a responsibility of all the teachers who meet the pupils. The emphasis should be upon developing in the child the ability for critical thinking. Even in the lowest grades children can be given the challenge of finding out how to attack a new word, how to infer the meaning of a word as used in context, how to recognize common elements among words, both in configuration and in meaning. The child should be made aware that critical thinking is an active process in which he can participate by collecting data, or suggesting examples of a principle, or demonstrating equivalences or similarities. He should be encouraged to see that one of the first steps in critical thinking is to organize information and experiences about problems by recognizing similarities or differences.

One of the most provocative experiences children can have is the challenge of suggesting hypotheses for a set of outcomes or facts. These could range from accounting for the pattern of rainfall in eastern Puerto Rico, the probable reasons for the Union Army's failure at the Battle of Bull Run, to the efficiency of a bicycle over a tricycle. The children should be encouraged to challenge some generalizations in terms of: What are the facts? Are they grouped properly? Did the author make an error in generalization or in inference? The matter of proof depends to a large degree on the respect for evidence. Can the children be led to recognize that not all the evidence has been adduced for a particular generalization or that the generalization does not consider all the available evidence? Undoubtedly, many opportunities will be found for understanding and criticizing advertisements and their claims, or for the understanding of propaganda, both positive and persuasive.

Since thinking is to be encouraged with reference to all experiences of the child, all teachers must cooperate in making the child aware of the importance of critical thinking, not only with reference to school learning but also with reference to experiences outside the school. This means that the child should be taught to test his own attitudes and interests. He ought to try to find out why he has certain attitudes toward people from other countries or toward a particular professional baseball team or toward one political party. For maximum transfer to be effected, all teachers must encourage and reward critical thinking. This, of course, implies that the teacher is competent to think critically in her subject area so that she is able to give illustrations of the way generalizations are developed, how evidence is organized, how hypotheses are formulated, how the requirements for proof are utilized.

In a significant sense, it will not be easy for teachers to reward critical thinking if they themselves are less than fully competent in the process.

One of the most exciting ways for a teacher to become aware of the aspects of critical thinking relevant for her in her particular area of competency is in the making of reading tests. As the teacher tries to formulate the kinds of questions suggested in the treatment of the passage used earlier, she will become aware of the fact that she is making hypotheses, suggesting organization of data, seeing relations that exist between the passage and past experience and knowledge. If the teacher were to try to make multiple choice questions, she would see that some of the most likely errors in thinking could be anticipated. For example, the following three items are items made to evaluate the child's understanding of the passage:

1. The best title for this passage is (*a*) Sweat Shop Labor, (*b*) *Ready to Wear Clothing,* (*c*) Military Uniforms, (*d*) Unfair Competition, (*e*) Dangers of Prison Labor.

2. The experience of the military tailors in manufacturing uniforms for the Austrian Army gave the tailors the experience for (*a*) producing large stocks, (*b*) establishing fixed prices for clothes, (*c*) opening branch stores, (*d*) *standardizing measurements,* (*e*) training master tailors.

3. The development of mass production of clothing on a large scale awaited the (*a*) development of retail stores, (*b*) elimination of prison labor, (*c*) improvement of clothing design, (*d*) growth of labor unions, (*e*) *invention of the sewing machine.*

Again, it is always stimulating to try to determine if given facts can be organized in terms of common principles or in sequences. The illustration given at the beginning of this article on the organization of verbs about thinking represents one attempt to show the generalization emerging from an active search for organization. Some forms of content organization can be widely applied. In the United States Air Force, for instance, the use of a general scheme applied to any problem became the basis for improvement in quality of the solution produced for problems by officers.

Thinking is an active process. It seeks and searches. It organizes and generalizes. It collects and solves. Thinking does not always produce a set answer. It is not memory, although it uses what is remembered; it is not generalization, but the process of arriving at generalization. Thinking is basically an attitude of suspended judgment about the problems all of us face.

Using Paragraph Clues as Aids to Understanding

James M. McCallister*

ANYONE WHO gives careful attention to the mental processes associated with reading soon recognizes that reading is not a simple procedure and that there is no single way of teaching it. The mature reader uses many processes dependent on his purpose for reading material, the author's pattern of writing, and other clues which aid in ascertaining meaning. This article is designed to emphasize one approach to interpretation which seems to be overlooked frequently as a teaching device. It deals with the interpretation of paragraphs.

The widely accepted approach to paragraph interpretation consists of seeking the principal thought and supporting details. This approach assumes that every well-written paragraph is developed about one essential idea; that this essential idea is often found in the first sentence; that it is sometimes found in the last sentence; and that sometimes it may not be stated in any one sentence but may be formulated by the reader. In any case, to interpret the paragraph it is necessary to identify the essential idea and, if need be, to support it by the subordinate details.

This approach to paragraph interpretation overlooks the fact that each paragraph plays a role in the pattern of writing in which it occurs. That role is frequently the most helpful clue in interpreting the paragraph and in ascertaining its relation to the selection in which it occurs. A number of examples follow to illustrate the differing roles that paragraphs play in the patterns of writing found in school textbooks. To read the paragraphs effectively, attention is directed to the differing internal clues in the paragraphs instead of attempting to fit all paragraphs into the single pattern of central thought and supporting details.

Introductory Statements

The introductory statements that are found frequently at the beginnings of selections are valuable in giving the reader a mental set that aids greatly in interpretation. Such statements usually give the purpose of the author; they may give a preview of the contents of the selection, and they may indicate its plan of organization. They prepare the reader by indicating what he may

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expect to find in the selection as he reads. By using introductory statements as guides to reading, the reader comprehends better the intention and exact meaning that the author intends to convey. Read the following introductory statement from a chapter entitled "Simple Sentences." How will this statement help to interpret the chapter which follows it?

> "What you have to say is excellent, but for a maturer style use more participles and infinitives."
>
> If you found that comment on your paper, would you understand the teacher's suggestions? English, like any other subject, has a specialized vocabulary. Fortunately, though, the specialized vocabulary is comparatively small. Knowing the names of eight parts of speech and about two dozen other terms will give you the tools for improving your writing and speaking. This chapter will provide a refresher course on fundamentals of sentence structure.[1]

Paragraphs of Definition

Paragraphs often develop concepts or define technical terms. Such paragraphs are particularly important to future understandings of the text because, when the terms are used again, it will be assumed that the concepts are known to the reader. After reading the following statement, what concepts should be familiar to the reader? Note that no single central thought will suffice in learning these concepts.

> The positive integers greater than one are either *prime* or *composite numbers.* If a number is *prime* it has no integral factors other than itself and one. A *composite* number is factorable into the product of two or more primes, each less than the composite number. . . .
>
> Each composite number has at least two prime factors. For example, 6 can be factored into $2 \cdot 3$; 8 equals $2 \cdot 2 \cdot 2$; and 18 equals $2 \cdot 3 \cdot 3$. We call the expression of the composite number as the product of primes the *decomposition* of the number. If a number is factored in any manner, we call the indicated product of the factors a *factorization* of the number. But a factorization is a decomposition only if the factors are prime. For example, $2 \cdot 6$ is one factorization of 12; $3 \cdot 4$ is another; $2 \cdot 2 \cdot 3$ is a third factorization of 12. Only $2 \cdot 2 \cdot 3$ is a decomposition of 12. Usually the factors in a decomposition are arranged in order of increasing size.[2]

Principle Explained by Illustration

Paragraphs and also longer selections are often organized in terms of a principle or a process supported by one or more illustrations. Sometimes the reader confuses the illustrations with the principle that the author intends to define. This confusion grows out of the fact that the illustration attracts more attention or is more interesting than the author's point. The competent reader differentiates carefully between the intended thought of an author and the illustration used to clarify that thought. What is the significant principle in the following paragraph? What illustrations are used to clarify that point?

> "All active volcanoes send forth gases and smoke" is a scientific principle. "Many kinds of plants and animals live only in water" is another. A scientific principle is a general truth. It is always a conclusion that has been arrived at from much observing or experimenting, or usually from both. Correct observing and experimenting result in discovering facts. A principle sums up many separate, closely related facts into one truth that includes them all.[3]

Associating Text with Pictorial Illustrations

In reading, it is frequently necessary to associate the textual discussion with maps, graphs, and other forms of pictorial illustrations. Note that in reading the following passage the attention of the reader shifts three times from the text to an accompanying map which acquaints him with routes. In this and similar reading situations careful comparison of textual material and illustrations is essential to understanding.

> . . . The map on page 256 shows the routes by which these pioneers made their way westward.
>
> Notice the Cumberland Gap, at the southeastern corner of what is now Kentucky. This pass *through* the Appalachians provided a way into what are now Kentucky and Tennessee. Notice, too, that pioneers could move into the southern regions by following a route around the southern tip of the mountains. Most of the settlers in what are now Alabama and Mississippi took this route. Finally look at the peninsula that makes up the state of Florida. Notice that settlers could easily move into this region from both Georgia and Alabama, following the coast and the coastal plain.[4]

Comparison and Contrast

Another technique frequently employed in composing paragraphs is to present comparisons and contrasts which clarify the significant points that the author intends to make. The interpretation of such paragraphs requires mental processes suited to the pattern of writing. Note how the author uses comparisons and contrasts in the following paragraphs to illustrate changes in the presidency. Also note the character of thinking necessary to understand the paragraph. What do you understand from his comparisons and contrasts?

> There have been striking changes in the White House before in our history. One such occurred when the cold, austere, and studious John Quincy Adams was replaced by the fiery frontiersman Andrew Jackson. Another saw the wise and patient Lincoln followed by the obstinate, egotistical Johnson. But none was more remarkable than the replacement of Harding by Calvin Coolidge. Here was no handsome, genial executive, surrounded by good fellowship and convinced that many problems of statesmanship would surely yield to good nature and friendly understanding. Instead we had a plain, silent, austere President. For Coolidge was a Puritan Yankee. He placed responsibility and thrift at the top of the list

of virtues and was as rigid as the granite of his Vermont hills.[5]

Cause and Effect

The interpretation of many paragraphs is dependent upon the recognition of relations between cause and effect. Notice how this type of relation is the clue to understanding the following passage.

> Water puts out a fire for four reasons: (1) It keeps oxygen from the burning material. (2) It cools the burning substance below its kindling point. (3) To change water to steam requires heat and much of this steam must come from the burning substance, thus cooling it below its kindling point. (4) It produces steam which acts as a blanket and shuts off the supply of oxygen.[6]

Problem Solution

Many selections present problems and offer solutions for the consideration of the reader. In such selections the problem should first engage the reader's attention; then he may examine the evidence concerning the problem and the author's solution; finally, the reader may formulate his own conclusions after considering the author's presentation. In dealing with problems it is often necessary for the reader to span more than one paragraph to apprehend meaning. What problem is presented in the following paragraphs? Do you agree with the solution presented?

> Ever since the adoption of the Virginia and Kentucky resolutions, which declared that a state has the power to decide whether an act of Congress is constitutional, men had argued the question as to where lay the final authority. Did the state courts or the federal courts have the last word in declaring what is the law of the land? Led by Chief Justice Marshall the Supreme Court, in a series of decisions, asserted its authority to pass on the constitutionality of a law. This view of the Court as final authority was set forth in the case of *Marburg vs Madision* (1803).
>
> In this case, in the name of the entire Court, Marshall declared unconstitutional a portion of the Judiciary Act of 1789. Since the Constitution is the supreme law of the land, Marshall argued, it limits the powers of Congress. If Congress could ignore its limitations, then the Constitution would disappear. The courts must therefore declare null and void any legislative act which is contrary to the Constitution. "It is emphatically the province and duty of the Judicial department to say what the law is." This is the principle or idea of *judicial review*. It is not stated in the Constitution.
>
> The decision shocked President Jefferson and other Republican leaders. They denied that the framers of the Constitution meant to make the judiciary branch more powerful than the legislative and executive branches. The final authority, they insisted, should rest with the people's elective representatives, not with the judges who are neither chosen by the voters nor accountable to them. Jefferson said that Marshall had made the Constitution "a mere thing of wax in the hands of the judiciary, which they may twist and shape in any form they please." However, Marshall's view prevailed.[7]

Events in Chronological Order

It is often important to place an event in time, to know when it occurred in relation to other events, or to recognize the time order of a series of events. The reading process includes a sense of timing. The following paragraph is an illustration.

After ten months of struggle, the Constitution was finally accepted by the required number of states. Delaware was the first to "come under the Federal roof" on December 7, 1787, when its convention voted unanimously in favor of ratification. New Jersey and Pennsylvania followed before the end of the year. But it was not until the middle of 1788 that the Constitution received the approval of the required nine states.[8]

Enumeration or Summary

Some paragraphs have for their purposes the enumeration or summary of a number of ideas. Such paragraphs are usually found at the ends of chapters, but they may also occur at any point where it is desirable to list a number of details. If the reader desires to master the details and to remember them for future use such paragraphs require concentrated attention and somewhat slow intensive reading. Note the series of details in the following paragraph.

The circulatory systems are pathways through which food, oxygen, waste products, secretions, and blood corpuscles are transported. Some substances diffuse out of the blood through capillary walls; other substances diffuse from the tissues into the blood through capillary walls. Some substances are collected in the lymph and returned to the blood through lymph vessels. Water is the vehicle facilitating diffusion and transportation.[9]

The nine illustrations given above are intended to show that the internal clues contained within paragraphs direct the intention of the reader to the role that paragraphs play in patterns of writing. These clues indicate the most direct approach to interpretation of paragraphs. The use of clues represents only one of many approaches to paragraph interpretation.

The illustrative paragraphs also suggest how the mental processes of reading may vary from paragraph to paragraph and from subject to subject. A more comprehensive analysis of textbooks would undoubtedly disclose other types of paragraphs and other mental processes. For example, to save space, illustrations of transitional paragraphs and descriptive paragraphs have been omitted.

Furthermore, types of writing other than textbooks would certainly disclose different clues and different mental processes.

An analysis of fiction, drama, poetry, essays, news stories, and other forms of writing would increase the number of clues and the variety of mental processes required for interpretation. Without doubt, the mature reader utilizes these internal clues as important guides to understanding. They may be used also as valuable aids in teaching comprehension skills.

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[2] Glen D. Vannatta, A. Wilson Goodwin, and Harold P. Fawcett, *Algebra Two* (Columbus: Charles E. Merrill Books, Inc., 1962), p. 74.

[3] Francis D. Curtis and George Greisen Mallinson, *Science in Daily Life* (Boston: Ginn & Co., 1955) p. 9.

[4] Mabel B. Casner, Ralph H. Gabriel, *et al.*, *Story of the American Nation* (New York: Harcourt, Brace & World, Inc., 1962), p. 254.

[5] David Saville Muzzey, *Our Country's History* (Boston: Ginn & Co., 1961), p. 574.

[6] Franklin B. Carroll, Sam Adams, and Lee Moncrief Harrison, *Science in the Universe* (Philadelphia: The John C. Winston Co., 1958), p. 33.

[7] Ruth Wood Gavian and William A. Hamm, *United States History* (Boston: D.C. Heath and Co., 1960), pp. 226-227.

[8] George G. Bruntz, *Understanding Our Government* (Boston: Ginn & Co., 1963), p. 231.

[9] Relis B. Brown, *Biology,* 2nd ed. (Boston: D. C. Heath and Co., 1961), p. 124.

Directing Reading Comprehension

A. W. ANDERSON*

SINCE THE function of reading is to satisfy some purpose, or to solve some problem which necessitates the using of reading as a means, it would seem to be obvious that the development of reading skills which lead to the required end must form a basic element of any reading program. These skills may be used singly or in various combinations according to the nature of the purposes involved.

If the selection of the skills required is based on the purpose, it follows that the purpose must be clear to the reader before he begins to read. This implies that most directions and comprehension checks should be placed at the beginning of the passage which is to be read, and the reader should be instructed to read them first. In other words, the reader starts from something which is known and proceeds to deal with the unknown content in these terms. After all, the aim of teaching reading is to develop proficiency in satisfying some specified reading purpose accurately and economically, and to spend no more time on the reading than the purpose requires.

Some reading skills are only meaningful if the question, problem, or purpose is clearly stated at the beginning. Skimming, for instance, is a search or locational skill, which is used to find that part of the material which deals with the point of importance. Key-word or key-phrase reading becomes meaningless unless the reader starts with some knowledge of what he is seeking, for words have little intrinsic importance, and only become significant in terms of some purpose. Words are key-words with reference to some problem or purpose, and unless the reader knows the nature of the problem or purpose he will not be able to select the words he needs to read.

The writer cannot speak with reference to other educational systems, but it is probable that the most generally used method of checking comprehension is to use unseen, and therefore unknown, questions. Such a procedure gives the answering of certain questions as a purpose, and invites the reader to read with this end in view. It does, however, omit to tell him the specific nature of the questions.

In a situation where one wishes to force the development of accurate reading for details, with the reader quite clear that he must read everything since he may be questioned on any part, the procedure of using unseen questions is a valid method of developing comprehension. This is especially true if rereading is not permitted: the function of the unseen question is to determine the amount remembered on a single reading. If one is allowed to reread without a time penalty, there is no point in setting unseen questions. The reader may as well know what is required before he starts.

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*Reading Teacher, 13, (February, 1960), 206-207, 211.

Constant use of the unseen question method, other than in the situation mentioned, or in a comparable situation, is quite likely to retard reading development, and it might do this in the following ways.

If most of the comprehension checks appear in this form, the reader is likely to believe that this is the basic method of reading, and he may fail to realize that one reads different materials in a variety of ways according to different reading purposes. He will come to believe that the only way to read is to begin at the beginning and read slowly through, attempting to memorize everything. A transfer of this method to all reading produces slow, inefficient, and uneconomical reading, usually with poor comprehension.

Secondly, the habit of clarifying one's reading purpose before beginning to read is likely to remain undeveloped, because the reader has faced too many unknown or "mystery" reading tasks to have obtained any real practice in setting his own reading goals.

Thirdly, the reader will not develop adequate sensitivity to selecting important from unimportant parts of the material he reads, for to him everything will have potential importance. Selective reading will be almost nonexistent.

Fourthly, the reader will not develop multiple reading skills, since he will not have been presented with tasks requiring variety of purpose and method. In the main the "conversion" skills which permit the translation of a true reading rate into an "efficient" rate of coverage in terms of a given purpose will not be used.

One could, of course, extend this list. It seems clear, however, that unless most questions, and other comprehension checks, are placed so that they are read first, readers are not likely to become active and purposive in their approach to reading. The writer has had this illustrated in working with adults (*3*) and university students (*1, 2*). These people have come through a system which has accepted the principle that reading instruction is carried out in the primary school only, and mainly along the lines of detailed reading for comprehension based on unseen questions. No deliberate attempt has been made to develop more advanced reading skills. It is very difficult to persuade them that the basic premise in reading is to begin with some purpose, no matter how unstructured this may be, and to convince them that the amount of material to be read and the skills to be used are determined by this purpose. Placing the questions at the beginning, together with the instructions, produces immediate gains in comprehension and rate. This method puts the purpose in the mind of the reader and not in the mind of the teacher. So long as the purpose remains in the mind of the teacher, reading instruction is reduced to a guessing game, in which the reader always comes off second best.

One might hope, therefore, to find fewer reading tasks headed, "Read this passage and then answer the questions at the end. Do not reread," and more tasks headed, "Read the following instructions and questions, then read the passage which follows and answer the questions." Gradually the reader will develop facility in setting his own purposes and may need only exercises instructing him to select the main idea, the writer's mood, the significant subordinate ideas, or, in certain cases, to read for important detail to answer a problem. Such an approach is more likely to develop independence of reading and, with the aid of specific exercises and instruction, develop a variety of reading skills.

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Rhetorical Guides to Reading Comprehension

PHILLIP SHAW*

ON THE higher educational levels, a lament frequently heard is that students cannot write correctly and cannot read accurately. Is a common cause at fault? Every teacher is aware that, from the elementary school to the university, many students do not know the characteristics of their language. Few have learned the principles of English rhetoric. (How many college students can define "rhetoric"?) Few have been required formally to study English grammar—syntax, morphology, phonology, semantics, and English nomenclature. Even at college, sometimes when an English teacher tries to communicate with his students, the result is comic. (If you ask a student to pick out a dangling participle in his paper, and he points at an auxiliary verb, where do you go from here?)

In the field of reading, a common slogan is: "A student learns to read by reading." At meetings of reading teachers, a usual question poses a what-shall-I-give-him-to-*read* problem. Perhaps in both reading and writing too much stress is being put on learning from experience, and not enough on learning from instruction. The problem of teaching pupils to write and to read effectively may very well be largely the problem of teaching them to acquire a formal mastery of content.

Study of rhetoric and grammar works two ways. What is writing but preparing matter for reading? An author's rhetorical and grammatical contrivances as a writer are the characteristics of his text. Like the ice-cream cone, which is both container and confection, a writer's contrivances not only support ideas, but also are digestible themselves.

Let us imagine that we are visiting an English class discussing *Macbeth*. The teacher asks: "From your reading of *Macbeth*, what do you recall about the second conversation between the Witches and Macbeth? The teacher expects the responding students to summarize the scene: the concoction of the sickening brew of the Witches, Macbeth's frenzied curiosity, the consequent apparitions and fateful prophecies. She also expects the students to recall the precise point at which Shakespeare placed the scene in the plot. For if Shakespeare had set the episode earlier, the impetus for Banquo's murder would come from the soliciting hags rather than from Macbeth's own mettle. If set later, Macbeth's frightening change from assassinator to butcher would be sheer melodrama.

Besides placing scenes by special design, playwrights employ other stock rhetorical devices as props for their ideas. Our English teacher of the previous paragraph is likely, therefore, to ask questions about such conventional dramaturgical contrivances as these: the timing of characters' entrances and exits, the first words said by each person, characteristic expository clues to character spoken by a person about himself or said by others about him, the particular "exiting force," the point of "climax," the start of the "catastrophe."

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*_The Reading Teacher, 11,_ (April 1958), 239-243.

Previous experience with a certain playwright can be of considerable help to a student when he reads him again. When our English teacher assigns the next play, say *Hamlet*, she hopes that her students will, as they read this play, perceive certain characteristics already noted in *Macbeth*. In *Macbeth*, scenes begin with "continued conversation," and Shakespeare emphasizes conscience. By anticipating similar characteristics in *Hamlet*, students will not overlook points of reading comprehension that will enable them to answer such questions as these (usually much to the surprise of the poorer readers, who marvel that these classmates noticed "so" much): Does the abruptness of Claudius' first words after the play-within-the-play betray panic? How does Hamlet, a moral man, excuse himself for his murder of Polonius, Rosencrantz, and Guildenstern? Does Shakespeare forgive Hamlet for his total annihilation of the House of Polonius?

Each type of literature displays distinctive rhetorical guides to reading comprehension. Upon completing a short story, for example, a student can expect the title to give him a mental jolt that it was powerless to induce before he began the story. Further, an analysis of the closing paragraphs of a short story in contrast with its opening paragraphs, is likely to disclose motifs which would otherwise escape attention. To get the most out of a play, short story, literary essay, poem, novel, or biography, a student should learn and utilize a "pre-reading knowledge" of the stock rhetorical devices of each literary genre.

In literature, contrived devices are not merely aids to understanding. They are deliberate, artful creations that the reader is expected to "appreciate" for an aesthetic experience. So-called escape reading is not literature because its emotional appeal is so primitive that the reader surrenders his power of self-determination—he "loses himself" in the matter. As for the student who reads literature without bothering to note the author's contrivances, he may derive from literature as much as he gets out of a laundry list: information without evaluation.

A recently issued battery of reading achievement tests contains a significant kind of comprehension item. Besides presenting items pertaining to subject matter, the battery tests the student's recognition of authors' techniques of presentation in both literary and non-literary selections. (Reference is made here to the Sequential Tests of Educational Progress of the Educational Testing Service, Princeton, New Jersey.) Grasp of an author's rhetorical devices is an aspect of what can be called "total" reading comprehension, whether the reading matter is literature or non-literature.

In the school career of a student, most of the non-literary subject matter that he is expected to comprehend "totally" is in the form of the textbook. Although textbooks of various fields and authors differ, this species of writing displays distinctive rhetorical characteristics. As suggested by the derivation of the word "text," a textbook is a compilation of selected information that the author has woven into a manual of integrated instruction. If the student as a *reader* utilizes in reverse the rhetorical principles of exposition that he has learned as a *writer*, he will take full advantage of the author's contrivances of "weaving." In particular, while reading a textbook, the student should look for evidences of the Big Three of rhetoric: unity, order, and coherence.

The skilled reader views a textbook as a unified, orderly, and coherent book. The author has composed a table of contents that reveals the organization of his work, a preface that states his purpose or general approach to his subject, a first and a last chapter that to some extent respectively forecasts and reviews the nature and order of the subjects to be treated. Also, within each chapter the author probably has devised headlinks that echo the previous chapter, and endlinks that anticipate the next chapter.

Each chapter of a textbook can be expected to display a discrete unity; it has a "limited subject" and a "principle of selection" of topics. The author has divided the chapter either obviously by headings or less conspicuously by special passages within the context, or by both. Textbook chapters are ordinarily so long that they are divisible into numerous sections. Some authors use headings to split their chapters into sections consisting only of a paragraph or two. Other writers set somewhat larger groupings of ideas under single headings. Still others use but several headings per chapter. Whenever a student reads a particular textbook for the first time he should make a point of noting the author's particular use of headings to achieve rhetorical "order" in a chapter.

Besides headings, authors of textbooks use special stock rhetorical devices to display the systematic order of ideas in a chapter. Students should, for example, examine the beginning of a textbook chapter especially critically for passages that predict the organization of the chapter. The following two excerpts illustrate predictive statements: A. "During the first half of the twentieth century Great Britain was confronted with three threats to her empire." To the experienced reader, this sentence forecasts three divisions of subject matter. B. "The peculiar quality of the conduct of foreign affairs in the United States raises to a maximum the weaknesses inherent in a democracy, and aggravates these inherent weaknesses by unique constitutional devices and political practices." This statement predicts an exposition of "weaknesses," "constitutional devices," and "political practices."

If a textbook chapter fails to display headings or other editorial signs of orderly organization, the student must be on the lookout for special coherence devices. Authors frequently use transitional passages to signal the beginnings and ends of chapter divisions. Such sentences as the following are contrived guides to comprehension of the structure of a chapter: "Let us now turn to the Royalists' view of the storming of the Bastille." "The Bessemer process for removing carbon and impurities is not the only method of manufacturing steel." "Chaucer's second literary period is that of the Italian influence." "Still another type of logic is the syllogism." Another and common coherence device is use of *now* and *but*, as in "Now, an inquiry into the nature of climatic changes . . . ," "But a child of six cannot be expected to . . . ." Other contrivances of coherence are questions, the editorial second person ("Let us . . . ." "We now come to . . . ."), and abrupt, bold statements ("Darwin is a controversial figure." "Railroad officials must eat"). Special editorial clues to thought units are afforded by marginal notes (often set into the text), marginal indentations (as for scientific or mathematical laws and formulas), running titles (headings at the top of each page), special type (such as bold type, italics, and small and large capitalization), and other visual aids (like pictures, charts, and diagrams).

Since the time of the ancient Greeks, experienced authors have presented exposition in distinct thought units, or paragraphs. The importance of noting, during reading, the obvious patches of white page that mark boundaries of paragraphs, is evident when one considers precisely what "reading" is. As one reads, letters are flashed on the retinal cells of the eyes. Instantaneously, the optic nerves transmit the signals to the brain. The brain then organizes these signals into thought-segments, reorganizes the thought-segments into ideas, and classifies each idea as main or subordinate. Reading thus is the process of seeing independent items ("perceiving"), observing their interrelationships ("assimilating"), and grouping them into main ideas ("integrating"). The reader who disregards the paragraph indentations of a textbook must assimilate and integrate the raw thought-segments as best he can, or simply master details without bothering about assimilating them at all. The conventions of paragraph-building are based on logic as well as custom.

Expository paragraphs generally display certain stock characteristics of unity, order, and coherence. An author of a textbook ordinarily uses a paragraph to present one particular judgment or one classification of particulars. Most paragraphs contain at least one sentence that is more general than the rest, that exhibits the unifying judgment or classification. Note, for example, the following two sentences: A. "Asiatic peasants seek improved medical care, schools, land, controls, and farming methods." If this is the most general statement of the paragraph, the reader may assume that the author has contrived to unify the particulars of his report by the common classification "improved." B. "The complaints of the peasants of Asia are just as specific as those in our Declaration of Independence." As the chief generalization of the paragraph, this statement expresses a judgment (the comparison); evidently the author considered the word "specific" too broad to serve as a unifying classification.

It may be asked: Are authors of textbooks really systematic in their paragraphing? The inquirer anticipating a negative answer undoubtedly recalls unhappy experiences with poorly written texts. Fortunately, editors of publishing houses are becoming increasingly critical of the presentations of their textbook authors. And the new generation of textbook authors is not too balky at editorial revisions made or recommended by publishers' "readers"—those dedicated enemies of faulty composition.

As for the rhetorical quality of "order," a student should read a paragraph with a sense of expectancy that the facts appear in a contrived sequence. For example, while reading a description of a process, he should anticipate a chronological order. If a paragraph opens with a general statement, the predicted procedure is from the general to the particular. If it begins with details without a unifying generalization, the student should expect a conclusion.

Rhetorical terms of coherence are also guides to reading comprehension of a paragraph. Conjunctions are common links. The correlative conjunctions (both . . . and, not only . . . but also, either . . . or) mark pairing of ideas. Subordinating conjunctions signal special connections, as cause-effect relationships (because, since, so that), conditions (if, unless, although), contrast (whereas, while), and time relationships (as, before, when, after). Besides pure conjunctions, certain adverbs have conjunctive impact (however, therefore, nevertheless, hence, similarly, conversely, accordingly), as have directive expressions (for example, on the other hand, in conclusion, in other words).

Whether a student is participating in a remedial, corrective, or developmental reading program, he should benefit from instruction on rhetorical guides to comprehension. Better still, he should be taught rhetoric as a formal body of subject matter in the field of writing and reading. And if the reading teacher believes in the restoration of both English rhetoric and grammar to its former respectable place in education:

Be lion-mettled, proud, and take no care
Who chafes, who frets, or where conspirers are.

Developing Vocabulary and Comprehension Skills at the Secondary Level with Particular Attention to Motivation Factors

GEORGE SCHICK*

On every level of teaching above the middle grades, a very considerable amount of attention has been given during the past ten or 15 years to the problem of increasing students' speed of reading. As a consequence, preponderant emphasis has been placed on the physical aspects of the reading act or upon the statistics of words-per-minute in nearly every discussion of reading instruction, to the ultimate neglect of the importance of vocabulary growth and of the improvement of comprehension skills. Although the exaggeration of speed in the total reading process has been particularly noteworthy in college and adult programs, it is more and more apparent at the secondary school level.

In the pioneer stages of the concept of developmental reading, perhaps this stress on speed and physical factors was almost inevitable, in part because it was so easy and simple to count eye-fixations, regressions, words per minute, and to operate a stopwatch. But stop-watch techniques and exclusive concern for the physiology of reading are clearly not enough, as every thoughtful teacher of reading will agree. Yet speed and facts about the physical eye are not to be ignored—rather they must be relegated to their rightful place in the development of the unique combination of skills that go to make up proficient reading. Improvement in rate is essential to the tasks that reading teachers assume. But speed is but one means to the end desired. Indeed, under present circumstances of the availability of devices and instructional aids, speed would seem to be less important than many other activities pursued in a reading center, partly because it is relatively easy to produce improvement in rate.

So it is high time to be genuinely concerned with some of the other significant facets of the reading problem, namely vocabulary growth and improvement in comprehension skills. But here again it is necessary to recognize at once and fully that many scores of hours have been and are being spent in most high schools yearly on matters of vocabulary achievement and on comprehension of the printed paper. But the tendency seems usually to foster vocabulary growth as an end in itself, to seek to develop improvement in comprehension largely on the basis of high grades alone. Like speed, however, increases in vocabulary and in comprehension are also just means to an end. Seen in true perspective, a high score on a word-recognition test or a comprehension examination is intrinsically of little merit. But consequent improvement in reading ability and understanding is of real significance for the reading teacher. Hence the teacher—and in the best sense, every teacher is a reading teacher, must place the emphasis where it belongs—on ends not means. The goal to be sought is not a high score on a test or a superior mark in the instructor's grade book, or even the successful completion of one or more years of secondary school. The emphasis is rather on *individual achievement,* on the acquisition of skills and knowledge which work for better understanding of what is said and read. To be sure, not all pupils will respond to the motivation of self-improvement, and not all exercises in vocabulary learning or comprehension analysis will bring about manifest achievement of progress toward the goal of reading proficiency. Yet proper motivation would seem to be the answer, and

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**Reading as an Intellectual Activity, IRA Proceedings, 8,* (1963), 60-63.

assuredly vocabulary increase and comprehension improvement merely to show a five to 15 point gain are of less significance both to the pupil and the teacher as well than ultimate growth in power of understanding and in reading proficiency. This goal of self-improvement instead of a better grade, of investment in individual achievement, will require explanation, reiteration, and frequent repetition if it is to be fully comprehended. But it offers a reasonable answer to the questions that every pupil is entitled to ask: "*Why* am I given this assignment?—*Why* am I studying vocabulary lists or exercises?—*Why* am I taking all these comprehension quizzes?—What *good* is all this to me?" Surely the high school youth is not too young to accept and be moved by the principles of enlightened self-interest, provided he is enabled fully to understand them.

With the relationship of means-to-end in view, consideration must be given to some specific practices in vocabulary and comprehension improvement.

Vocabulary Growth

In general, the kinds of training useful in promoting vocabulary improvement fall into two categories: the analytical and the contextual approach. Each has its place in a well-rounded and thoroughgoing attack upon the problem of insufficient word-control.

The analytical approach includes the familiar drills in word roots, prefixes and suffixes; word lists for particular areas of knowledge, such as social studies, mathematics, or science; word lists of special interest such as those formed from proper nouns and those of especially interesting origin, development, or derivation. With the abundance of such material to be found in texts and workbooks, professional journals and the publications of dictionary makers, perhaps the mere enumeration of these instructional aids and practices will suffice.[1] Despite their familiarity and frequency of use, however, these exercises are not to be underrated in usefulness. When used in conjunction with appropriate motivational instructions and with recognition of the limitations of any purely analytical approach, they can be most helpful. They add to the pupil's knowledge and reading skills. Nonetheless, they should not be relied uopn entirely. Probably the gravest danger which may result from this sort of training alone is the pupil's assumption that English words have but a single meaning. Another difficulty may arise from the lack of relevancy to the pupil's needs or verbal weaknesses in a particular selection of word-lists, or the remoteness from normal reading circumstances in studying any group of words out of context.

The other means to vocabulary development is the contextual approach. Most simply stated, this presents new words to readers not as isolated phenomena but rather in their natural environment, that is, in sentences and paragraphs of text, where the verbal circumstances will tend to assist the reader in identifying, limiting, or amplifying meaning. By contrast with the analytical procedures already cited, the contextual approach has had very little consideration, or use, or research. At present there is but one college textbook[2] and only a single secondary school series[3] which utilize the undoubted values of a contextual procedure in acquiring new words or fixing the meaning of words already somewhat familiar. Since *Word Clues* is a pioneer in the application of the principles not only of programed learning but especially of contextual clues in vocabulary training, it will no doubt stimulate extensive use, further application of the same principles, and valuable and continued development and research. Indeed, the most promising area of investigation in methods of vocabulary improvement would seem to entail considerable study and research on the ways by which contextual clues may be emphasized to foster growth in word mastery. The challenge to be met is to find the means of giving experience with many new words in context without requiring hours and hours of reading. It is a complex problem but certainly not insoluble.

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[1] The two most general sources of material on vocabulary training are the publications of Edgar Dale and associates: *Bibliography of Vocabulary Studies*, Bureau of Educational Research, Ohio State University, 1949, and the later edition of 1957. Johnson O'Connor's "Vocabulary and Success" (introduction to *English Vocabulary Builder*, Human Engineering Laboratory, Stevens Institute of Technology, Hoboken, N. J.), is a classic in this field; Ernest Thompson, "The 'Master Word' Approach to Vocabulary Training," *Journal of Developmental Reading*, II (Autumn, 1958), pp. 62-66, and Wilfred Funk, *Six Weeks to Words of Power* (New York, 1960), represent two points of view on improving vocabulary.

[2] A. A. DeVitis and J. R. Warner, *Words in Context: A Vocabulary Builder*. New York: Appleton-Century-Crofts, 1961.

[3] Stanford E. Taylor, Helen Frackenpohl, Arthur S. McDonald, and Nancy Joline, *Word Clues*. Huntington, N. Y.: Educational Developmental Laboratories, 1961.

Growth of Comprehension

If continuing motivation is regarded as helpful in getting students to perform tasks in vocabulary growth and development, it is fully as necessary in promoting advancement in comprehension skills. For today's pupils are tested and retested, examined and quizzed at every turn during their scholastic career. But the first and prime factor to recognize in the use of comprehension checks is that they are not to be merely productive of grades in percentages, like 58 per cent, 72 per cent, or 69 per cent. Instead, they should be looked upon as the means by which pupils learn how to understand better what they read and by which their teachers learn better how to teach and develop depth of perception and comprehension in reading. If pupils can be brought fully to realize that the comprehension quiz is an instrument of learning, a device by which they can perfect their techniques of understanding, then the examination ceases to be a sentence of torture and becomes a tool for promoting maturity of reading.

In any detailed approach to the ways of achieving improvement of comprehension, due regard must be given to the elimination of several fundamental misconceptions about the nature of reading comprehension—and they are indeed difficult to eradicate. Some of these false notions are first that comprehending well means getting exactly what was said or written; that, second, a given passage has a series of ideas which the reader's mind absorbs like blotting paper; and, third, that the same passage should and must mean exactly the same to all readers. Yet a moment's careful thought will indicate the absurdity of each of these assumptions. So it is necessary to stamp out these erroneous notions fully, with frequent reminders to pupils of the fallacies that are incorporated in these wrong attitudes.

With these general factors taken care of, the teacher may develop the realization that comprehension is not a constant, but rather that there are many levels or degrees of comprehension, which the skillful reader adapts in accordance with his own purpose in reading the material. Here again motivation—in this instance, the reader's goal or purpose, is of transcendent importance. To make every pupil fully aware of the significance of purpose extensive practice is mandatory, for even the liveliest of immature minds find it difficult to predetermine why reading a particular selection[4] is required. Accordingly the student reader is to be trained carefully with exercise materials in such typical reading situations as getting the main ideas, reading for details in general or specifically for certain directions, skimming the entire passage for a swift impression of the whole, looking for inferences by the author, finding a particular statement or proper name or date, and the like. In each reading session with this practice material the pupil should be made to realize beforehand just why he is going to read the assigned selection; having settled definitely on his own purpose, he may proceed to the reading, adapting degree of concentration as well as speed to the specific task or circumstance. Little or no statistical evidence has been forthcoming on the validity of such practice as this; yet it seems amply safe to conclude that reader's purpose is of vital import. Repeated sessions in exercising his own judgment as to purpose can scarcely help being of tremendous assistance to the student-reader.

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[4] See William G. Perry, "Students' Use and Misuse of Reading Skills; Report to the Faculty," *Harvard Educational Review*, XXIX (Summer, 1959).

Another useful consideration for the improvement of comprehension concerns an analysis of the kinds of questions which customarily appear in comprehension checks. When student-readers become aware of the sort of questions they are likely to encounter—such as those on author's main ideas, on the subordinate ideas used to substantiate or explain principal thoughts, or the inferences to be drawn from the author's statements—then the disturbing features of an examination to test comprehension are gradually dispelled.

These are only a few of the types of analytical exercises which pupils should be required to perform. Still others devolve upon decisions concerning author's purpose, a fruitful approach, or upon extensive consideration of the structure of a given piece of prose. Here the detailed scrutiny will go from small to large elements, beginning with thorough understanding of the sentence as a unit of construction, moving then to paragraph, section or chapter, and finally to the whole passage. To be sure, secondary pupils are regularly asked to examine sentences and paragraphs, but mostly in the past this study seems to have been for the purpose of improving students' writing. But here the thought is to focus attention on the betterment of reading and comprehension through consideration of structural understanding.

Conclusion

With all this wealth of exercise and practice material at hand, thoughtful teachers of reading may safely move from preoccupation with physiological factors like eye movements, regressions, length of fixation and with scores in words-per-minute to the admittedly more subtle and difficult but likewise more significant features of the task of reading improvement, namely, the fostering of growth in vocabulary and comprehension skills. In every instance of this endeavor, close attention to motivational factors would seem to be of the greatest moment. With an understanding of *why* and *how* and *to what ends,* the secondary school pupil may be stimulated to increasingly mature skills as he develops his reading habits.

Sir Francis Bacon's advice, first written in the 1590's, may be most profitably adapted to the tasks here discussed, those of developing vocabulary and comprehension skills. He wrote in his profound little essay, "Of Studies," that "some books are to be tasted, others to be swallowed, and some few to be chewed and digested." So too are high school reading pupils to understand that reading may be performed at different speeds, for different purposes, with different degrees of concentration, for different results.

CRITICAL READING

It is acknowledged that critical reading is a phase of comprehension and might not be entitled to separate consideration. However it is so important and essential a facet that including separate treatment for critical reading seems justified. The reader will find that the various authors define critical reading from diversified points of view and give specific suggestions for developing pupils' abilities along this line.

Critical and Creative Reading

HELEN HUUS[*]

"CRITICAL reading" requires the evaluation of the material, comparing it with known standards and norms, and concluding or acting upon the judgment. Russell, in his classic work entitled *Children's Thinking,* points out that critical thinking is comparative and that a knowledge of the field is a prerequisite.[1]

"Creative reading," on the other hand, is concerned with the production of new ideas, the development of new insights, fresh approaches, and original constructs. Russell, too, emphasizes that creative thinking involves new ideas, "whereas critical thinking . . . involves reaction to other's ideas or to one's own previous ideas. Critical thinking can be creative in that it can produce new insights for the individual, but those insights are concerned with previously established conditions."[2]

Critical Reading

If students are expected to read critically, what are some of the necessary skills? Those needed could be classified into two broad categories—inference and evaluation. The critical reader swings from one to the other as he reads, first inferring, then evaluating his inference against his experiences and other data, then inferring and judging again.

The author. A reader ought to be concerned with the person who has written the material, and, therefore, he must make certain inferences about the author. He ought first to ask, "Why did the author write this? Was it to advertise, to propagandize, to present information, to promote a point of view, or to entertain?"

A related question ought to be, "How competent is this author to write an article on this topic for this purpose?" To answer this, the author's background, education, reputation, vested interests, and professional position need to be investigated. Practical exercises for doing this are included in the 1948 edition of *The Teaching of Reading in the Elementary School.* Here McKee suggests finding biographical information for each author, then comparing his qualifications with the subject on which he is writing. It is often not difficult, even for quite young children, to recognize that one or the other seems to be best qualified.[3]

Sometimes locating information about living authors, however, poses a problem, for often the only source of information is the dustjacket of a book, the comment column in a periodical, the advertisement from a publisher, or the reputation of the publishing house that has chosen to publish this author's works.

When expressing an idea or a point of view, it is difficult for an author to escape from himself and create an impression different from the kind of individual he really is. His competency becomes particularly important when facts disagree

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[1] David Russell, *Children's Thinking.* Boston: Ginn and Company, 1956, pp. 283ff.

[2] *Ibid.*, p. 306.

[3] Paul McKee, *The Teaching of Reading in the Elementary School.* Boston: Houghton Mifflin Company, 1948, Chapter 14.

[*] *Reading and Inquiry, IRA Proceedings, 10,* (1965) . 115-117.

and students look for help from recognized authorities. At any rate, knowing the author is an important factor in criticism. Once the information is acquired, these bits must be evaluated.

The content. A second aspect for inference and evaluation is the content itself—its adequacy or completeness, its accuracy and recency, its inherent logic and consistency, its suitability to the purpose at hand. Questions to be asked here include: "Are *all* the facts presented? Are the facts presented true? Are the facts presented logically and in perspective?" Exaggerated statements abound in advertising; willful distortion of facts is rampant in propaganda; and false assertions are made directly or implied, occasionally from ignorance, but sometimes, too, from lack of proper checking or even willful distortion.

Obviously all facts cannot be presented in a short selection nor is it easy to determine the total body of fact, but the perspective implied by the relative importance given to various topics should be preserved so that tentative conclusions can be made from the data available, with necessary modifications when additional data warrant it.

McKee also describes exercises for checking the validity of the printed statement and uses an example about the making of paper. Children can learn to delete irrelevant sentences in a paragraph, to note the omission of information needed for an understanding of the whole, to recognize ideas placed out of logical order, to separate factual statements from ones of opinion.

The style. In addition to the competency of the author and the quality of the content, the manner in which the material is written—its style and "tone"—also influence the critical reader. "Style" refers to the precision of vocabulary, its range and vividness; to the cadence of the sentences; to the subtle use of modifiers and figures of speech; to such techniques of elaboration as analogy, description, anecdote, or exposition; to the organization — the "unity, coherence, and emphasis" so dear to the hearts of English teachers. These elements, when combined, lend an appropriate tone to the total—solemn and dignified, lighthearted and gay, clear and simple, or whatever the topic demands. The reader should be able to join in with the spirit of the work and to lose himself as he identifies with it. He is truly "there," and when this occurs, he knows he has met an artist with words. While he may not always be able to isolate the various techniques that cause him to feel so involved, nevertheless he recognizes that this piece of writing approaches his standard and, therefore, is a better work than one which leaves him cold as last night's dinner.

Another aspect of tone, especially important in the materials written for elementary school children, is the approach that authors take when writing for children. Condescension and a patronizing air are unacceptable, and children are quick to spot it.

Creative Reading

A reader who has learned to judge what he reads, both content and manner of presentation, still fails to obtain the greatest pleasure, enjoyment, and even knowledge from his efforts unless, in the doing, he gives something of himself. He must amalgamate the total into his own background of information, what the psychologists call his "apperceptive mass," and reorganize his ideas to accommodate his new learnings, his new attitudes, or his new feelings. In this reorganization, he gains new insights—sees the same things from a different point of view, sees aspects hitherto not noticed, savors the color and texture of a word or phrase, stores away a new visual image, or feels empathy with characters he has previously ignored or misunderstood. Russell puts it aptly when he says that, in creative reading, "the solution or conclusion (to a problem) represents a bit more of the child himself, is fresher and more personal than a routine solution."[4]

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[4] Russell, *op. cit.*, p. 13.

Creative reading requires, then, certain skills of comparison and synthesis; comparison to see relationships between parts of sentences, paragraphs, and longer sections in order to arrive at the total, between causal factors and their accompanying results; between juxtaposed events, and between the actions of a character at different times; and comparisons of time and space, place and sequence. From these understandings the creative reader can produce his own combinations, his own synthesis of ideas, and anticipate what the outcome will be. That it is not the same as the author's need be of little consequence, and occasionally children have made a much more logical ending to a story than has the author himself.

Creative reading thus calls into play the child's imagination, his flow of ideas, his ability to see comparisons where no obvious one exists, to relate what he is reading to his own peculiar background of remembered activities, and to make the new learning so much his own that it has always seemed a part of him. This is the real contribution which reading makes to personality development, to the development of attitudes and ideals, to the making of the "educated man." And this is the goal of education, at whatever level.

But for teachers and others to know what lies behind the interested look, the quick nod, the perceptive twinkle requires that the child express the ideas he has been accumulating. Thus we see full circle in the language arts—from the receptive (reading) through evaluation and assimilation to the expressive (speaking or writing).

Creative reading ultimately resolves itself in the development of "taste," that "power of discerning and appreciating fitness, beauty, order, congruity, proportion, symmetry, or whatever constitutes excellence, especially in the fine arts and *belles lettres;* critical judgment, discernment, or appreciation."[5] As each reader makes up his own mind and follows his own judgment, individuality is preserved. He has no need for "tastemakers," for he has confidence in his own ability and need not wait for someone else to decide for him. He can interpret the situations in the light of his experience and understand analogies, allusions, figures of speech, connotations, and denotations; he can reorganize the ideas he receives into a pattern that is unique and personal. He can express his reorganized learning through various media—word and song, gestures and actions, materials and composition through the very make-up of his personality. The actual product may be as fleeting and transitory as spoken language or as lasting a monument as the Statue of Liberty.

Conclusion

If reading has produced real conviction, then the reader must be willing to meet all comers and defend his ideas, which must be firmly based on the integrity of his interpretation, on accurate factual data, and on his unique thoughtful approach. But he remains able to "live with-uncertainty" and to revise his ideas to another and still another plan as new information and experiences are acquired.

The skills of critical reading require an interpretation and evaluation of the author's qualifications and purpose of the internal consistency, accuracy, recency, and perspective of the content and of the style and tone of the presentation.

Creative reading requires skills of comparison and synthesis. It implies that the reader places known facts into a new organization and gains new insights that contribute to his development of taste. By these means do teachers create literature, discriminating, and appreciative readers. But these two are not mutually exclusive, nor are they synonymous. The reader does both, and the two overlap and interact to give him the fullest meaning.

The Logical Dimension of Critical Reading

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THE NEED *for Teaching Critical Reading.* A prevalent belief in our nation today is that the young child is characterized by almost complete acceptance of printed material without critical evaluation, that the high school student displays more judgment, while the adult can adequately judge the accuracy, validity and worth of what is read based upon sound criteria. Studies have shown that this is not an accurate account of what happens. When Rogers (6) studied the reactions of 30 high school sophomores and 30 seniors to printed material in an undirected reading situation as compared to a directed situation calling for critical reading, she concluded that students focused on remembering facts to the exclusion of evaluative thinking about what they had read.

In 1956 Gray (4) surveyed the reading habits of a number of adults in various occupations and reported that they did not recognize implied meanings or draw the conclusions which the materials justified. According to him, many adults read on a mechanical level and either did not react to the ideas read or did so at an unreflective level or in terms of their prejudices. An even more startling finding was that the high school graduates interviewed in the study did not display any more ability in interpreting meaning and reacting with sound judgment to the ideas read than did elementary school graduates.

In light of studies such as these, any assumption by high school teachers that they have little or no responsibility for developing increased competence in reading is seriously challenged. If the students in today's secondary schools are going to become citizens who will evaluate critically the ideas presented in increasing quantities of reading materials, they must be taught to read critically. In order to assume their proper responsibility for teaching reading, teachers must develop a working knowledge of the area.

Two Aspects of Logic in Critical Reading

Although the entirety of formal logic may not be in the province of the high school curriculum parts of it do have great value for teaching students to read critically. Some use of logic in judging printed materials is illustrated by the following questions: "Is the material internally consistent?" "Does the conclusion necessarily follow from the premises?" "Are the statements an accurate representation of what happens in the real world?" and "Are the statements dependable or trustworthy?" Two elements of logic—validity and reliability—and their application to critical reading are represented by these questions. These aspects will be explored in the remaining sections of this paper and techniques for teaching them will be proposed.

Validity of Printed Materials

A point of view or an argument presented in printed materials usually consists of evidence for the argument called premises and a conclusion. Validity is concerned with the internal consistency of the statement or argument and the attempt to determine if the conclusion necessarily follows from the premises. Most teachers will need to review the standards for determining when an argument is valid. Such books as *From Fact to Judgment,* Graves and Oldsey (3), *Logic and Language,* Huppe and Kaminsky (5) and *An Introduction to Critical Thinking* by Werkmeister (7) should help in the understanding of validity.

A simple valid argument which could have been extracted from a written passage is as follows: All cities in South Vietnam are under communistic control.

Reading and Inquiry, IRA Proceedings, 10, (1965), 121-124.

Saigon is a city in South Vietnam. Therefore, Saigon is under communistic control. Here, the conclusion does follow from the premises and therefore is valid even though the first major premise is not true.

Teaching Validity. Following are some steps which teachers may use to help students test the validity of an argument. First, the student may be asked to strip the argument of any excess words or sentences. In most reading material, the premises upon which the argument is based are imbedded in voluminous amounts of materials which are not directly relevant to the argument. The first task then is to extract the premises from such extraneous materials.

Second, the student must be sure that he has access to all the premises. This involves the recognition of assumed premises upon which the conclusion may rest. The statement "Khrushchev is a communist; therefore, he is dangerous," has assumed by unstated premise that anyone who is a communist is dangerous. Assumptions may be perfectly legitimate premises, and the student must understand that they are as important to the argument as those which are explicitly stated.

Another step for students is to determine if an author is referring to all of a group, some of a group or none of a group. For example, if an author writes that six-year-olds are not mature enough to benefit from systematic instruction in thinking skills, does he mean that no six-year-old is mature enough? When students are attempting the logical analysis of a passage, they should be cautioned to transform sentences so that they begin with *all, some* or *no*. Unfortunately most arguments found in the typical passage are not in this form.

After a student has stripped the argument to its basic framework, identified all of the premises both stated and assumed, and transformed the premises, he is then in a better position to determine if the conclusion logically follows from the premises.

Reliability of Printed Materials

Although an argument may be internally consistent or valid, it may contain inaccurate statements or may be based on incorrect premises. In this event, the passage is unreliable. The reliability of a passage is the degree to which it is dependable or trustworthy. When a statement has been verified, it is reliable. When verification is used as a standard for reliability, truth becomes an ideal to be sought rather than one that has been attained. In order to read critically, an attitude of suspending judgment and of questioning ideas presented on the printed page must be developed. Instead of working with "true" statements, students must learn to work with reliable statements that may prove to be false as more information is accumulated. Frequently, this produces an uncomfortable feeling among students since they have often been taught to believe that everything they see in print is true. Thus, they must learn that printed beliefs are at best probable and tentative. Two aspects of reliability are the writer's use of words and the use of unsound premises to influence the reader.

In order to judge the reliability of printed material, the reader must examine the way the author has used words. Even writers of highly-regarded publications will use words occasionally that color the facts and influence the reader. Some writers purposely strive to confound an issue with the use of appealing and emotionally-laden language. Many people have been stirred to action through such words as communist, racist, and un-American. The approach is to arouse an unfavorable reaction to a person by associating him with an unpopular group. This device appeals to the biases and prejudices of the reader by using words that can evoke a reaction that the writer desires. The reader must learn to separate words which have the power to produce feelings from words which merely serve to identify referents. He must learn that he is subject to being influenced through the printed page and must determine how various authors are attempting to influence him.

In addition to using words to color the

facts, authors may also use unsound premises which are often difficult to detect. The conditions may be understood, but the claims made are often exaggerated or unwarranted in some way. In this event, there is faulty reasoning on the part of the writer. The term fallacy is often used to refer to the faulty reasoning of an argument.

Prevalent fallacies are faulty generalizations, faulty analogies, assuming the cause "post hoc," and many others. To illustrate this type of unreliability let us consider an example of assuming the cause "post hoc." Attributing a stomach ache to the last meal eaten infers a causal relationship which may or may not exist. Or consider walking under a ladder, then failing an exam, and assuming that walking under the ladder was the cause of the failure. Fearnside and Holther's book, *Fallacy: The Counterfeit of Argument*, describes this fallacy and many others and also provides practical examples which may be used in high school classes.

Teaching Reliability. In order to illustrate a teaching situation, let us assume that the teacher and class have before them a news report, an editorial, or a pamphlet which they suspect uses biased words or has unsound premises. How can they verify or disprove the suspicion?

One of the first concerns must be the source of the information. Some questions to be considered are: (1) What is the source of the passage? (2) Who has control over the source? (3) What is his connection with the subject matter under consideration? (4) From past performances, how reliable is the source? Some publications have established reputations for honest, unbiased reporting. Others are known for exaggerating the facts. When readers have a choice of sources, it is desirable to teach them to refer to those which are trustworthy.

Also, printed materials may be classified into primary or secondary reports. Typical secondary reports are found in newspapers, textbooks and objective analyses of various kinds. Statements found in primary reports are often more reliable than inferences made from them or reports based on them.

A second criterion for determining the reliability of a passage is the qualification of the writer. A person who is qualified to give testimony should display special competence on the topic being discussed, should limit his writing to the topic for which he is qualified, and should be a fairly well established authority in his field.

Another criterion for examining the reliability of a passage is whether statements made can be corroborated by other sources. Ennis (*1*) reported that statements made in any source tend to be more reliable if they are statements of direct observation, are supported by other sources, or can be corroborated.

After the class members have investigated the source of the article, the authority of the writer, and have checked the statements with other references, they are in a better position to determine if the statements are dependable and trustworthy—that is, reliable.

Summary and Conclusion

The logical dimension of critical reading has often been neglected in our secondary schools. A better understanding of two aspects of logic—namely, validity and reliability—is prerequisite to growth in critical reading. In analyzing the validity of a given passage, it is necessary to determine if the argument is internally consistent, i.e., if the conclusion follows necessarily from the premises. To accomplish this task, students must learn to strip the argument of any excess words, to make sure they have access to all the premises, and to determine the implied universality of the author's statements. However, it is not enough to determine if an argument is internally consistent or valid. The student must also establish whether the statements have any reliability or whether they are trustworthy. Criteria for checking the reliability of a passage should include adequacy of the source, authority of the writer and corroboration of the statements. When questions on logic pertaining to the reliability and validity of reading material are asked by students in high schools throughout the country we can be more confident of developing a nation of critical readers.

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Critical Reading—As If There's Any Other Kind

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A NUMBER OF AUTHORITIES divide the act of reading into vocabulary or word recognition, comprehension, and interpretation or critical reading. The distinction between the latter two elements seems to arise from the notion that comprehension refers to understanding what the author has said, whereas interpretation consists in the evaluation of this information. Though it might be useful for academic purposes to make such a distinction, it becomes difficult and dangerous to attempt such a distinction in the reading situation itself. No one would advocate criticizing a work if the work has not been read. It is equally ludicrous to assume that anyone should ever say, "read this, but don't criticize it."

A clarification of "criticism" might be in order at this point. How often has the critic been compared to the reactionary or the obstructionist. How often have you prefaced a statement with, "I don't want to be critical, but . . . ," or invoked the shibboleth of "constructive criticism," implying that criticism can be dangerous at times. To criticize means simply to evaluate, to assess, to state what is good and to state what is not good. A critic is neither an optimist nor a pessimist; he is merely an observer recording his findings.

In one sense, it would be pleasant if criticism were unnecessary. Much mental effort would be spared if it could be guaranteed that a fact in print is a fact infallible. As a matter of fact, if the reader did not at times suspend his critical faculties somewhat and assume the validity of what he reads, his life would be chaotic. There is also efficiency in being able to go to a specific, reliable source for information. But there can be danger as well. When a person depends entirely on book learning to extend or to fortify his knowledge, he needs to read widely or he may eventually read only those sources which bolster his preconceived ideas.

There is nothing more secure than ignorance, and nothing more exasperating at times than the insecurity of knowing just enough to realize one's limitations. How glibly the regular in the corner bar solves all the problems of the world, problems which those in authority have great difficulty even defining. The college undergraduate soon knows all the answers, then in graduate school he learns some of the questions. A teacher is encouraged when her students have learned enough to verbalize a coherent question. If criticism is done properly, the critic will never be secure in the sense of being rigidly bound to a past commitment. He will be sufficiently secure in his present scale of values, how-

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ever, to be able to tolerate the suspension of judgment which precedes the acceptance or rejection of new data. The insecurity within the individual is caused by the limitations of his present information. It does not arise from undue commitment in the past, nor lack of confidence in the future.

The critical reader knows that his present fund of information is reliable, because he subjects it to constant evaluation. He also knows the relative value of each item in his hierarchy of values. He is aware of which concepts are the fixed stars and constellations that guide his life, which concepts are dependent satellites, and which are but meteors of brief intensity.

Criticism may be concerned with the author (writer or speaker), the material (written or spoken), or the receiver (listener or reader). The material itself may be description, explicit or inferred comment, or most often a combination of the two. In order to determine the proportions of subjectivity and objectivity, the reader must know the contents of the material and the purpose for which it was written, which leads to a consideration of the author. Is he merely trying to convey information "for what it's worth" without any benefit to himself? Hardly, because his reputation as an authority and the incomes of himself and his publisher may depend on the number of people who accept his presentation. And if the author proposes to convince as well as inform, he may sacrifice objectivity for chiaroscuro. Some areas of his picture may be brightened, others obscured, by downright lies or some of the questionable techniques of propaganda. And even if his own motives are above reproach, the author may have been the victim of such devices. Moreover, an idea may be right for the wrong reason ("don't steal if the cops are around"), or wrong even if one of its allegedly supporting facts happens to be true (discrimination is wrong, even if proportionately more crimes are committed by Negroes). Forgeries, typographical errors, and the like can also affect the validity of the material.

Since neither the author nor the material can be counted on to be consistently free from error, the reader is the person who must determine truth as best he can. He stops asking, "when do I read critically?" because he sees that he must do so whenever he desires accurate information.

What constitutes a critical reader? First, a critical reader must be biased. Not prejudiced, which he would be if he has formed conclusions without, or in spite of, supporting evidence; but biased, when he has come to a sincere conclusion on the basis of his background of experience with the subject in question. In other words, he must have a stand on the subject under investigation. If he has no stand—we use the term "open mind," though "empty mind" would sometimes be more appropriate—he may accept the first presentation which reaches him, because he lacks sufficient background to dispute the point. At best, he can delay final acceptance of the information pending direct experience or further consultation with other sources.

As was pointed out above, there is no intrinsic evil in accepting an authority's word for something. Difficulty arises when the reader forgets that verification must always be possible and permissible. Neither is there any problem in having the reader defer his acceptance of a "fact" until he has gathered additional data. The basic premise of criticism is that accurate data need not fear criticism. If a fact is acceptable at all it should remain acceptable when all of the pertinent data are available. Conversely, if acceptance of an idea is contingent on the suppression or distortion of certain factors in its makeup, there is something wrong with it. If a concept cannot tolerate criticism, it should not survive at all.

The author's purpose is the factor which determines the extent of his elaboration. He can describe how to drive a car without discussing the mechanics of internal combustion, and explain the process of reproduction without accounting for the chemical structure of amniotic fluid. Nevertheless, the reader should have available all of the detail he needs to understand the author's ideas. If the reader is aware that certain data are not supplied, he should be able to determine whether this omission will interfere with the purpose for which he is reading.

The second characteristic of a critical reader is his willingness to modify a present viewpoint. If a reader is certain that he is right, he will not even consider a change. If he is in error, he is usually unaware of it. Only a critical reader avails himself of opportunities to verify and possibly improve his present fund of information. The person who is always right may not care about the views of someone else. If these other views match his own, his ego is bolstered, but he will explain away or ignore any view that conflicts with his own, because if he were to learn that something else is correct his life would be filled with unbearable contradictions. To avoid such contradictions he must become (pardon the etymological pun) hypocritical.

But what happens when he accepts the possibility that he does not have all the answers, and that some of his answers may be incorrect? For one thing, the critical reader will compare his ideas with those of someone else. If the other source is correct, the critical reader has expanded his knowledge; if he is correct and the source is in error, he has strengthened his own position and probably equipped himself to deal with the error he has encountered. Either way he benefits. Arthur Koestler, in "The Eureka Process," uses the term "bisociation" to describe how brilliant insights and solutions to problems have been achieved when savants were willing to leave a preconceived frame of reference to relate otherwise ordinary concepts in original and unconventional ways.*

The third characteristic of a critical reader is that he be willing to involve himself in the consequences of a fact, once he accepts it. In some instances this involves nothing more than going along with the thought of the majority; at other times it may cost him his life and reputation if reading leads him to a personal commitment to action.

No one bothers to dispute the point that the *Aedes aegypti* mosquito is instrumental in transmitting yellow fever, nor does any one fear being known as favoring the elimination of this insect. The average reader has had no direct experience with yellow fever and knows it only from history, geography, or medicine. He has accepted all of this information because (1) several independent sources agreed on this fact, sources which were usually correct in other items or at other times when he consulted them; (2) these sources had no motive for deceiving him; (3) it makes little difference to him what the cause of yellow fever is, because in these times it has no direct bearing on his life.

Now, instead of mosquitoes and yellow fever, use the example of cigarettes and lung cancer. You probably have become critical because you have a bias on this topic. Your commitment on this question may have a number of consequences regarding your personal smoking habits, or whether you should allow others to smoke if you are in a position to control their behavior, whether you should watch a television show sponsored by a tobacco concern, or read a magazine which carries tobacco advertising. Your reaction to the question will be affected by whether you run a store which sells tobacco products, live in a state where tobacco is an important crop, or have had a relative who died of lung cancer. You could delay your decision, "waiting for more information of the subject," but even this will force you to act provisionally on one side or the other. You could also deny the evidence. After all, "it's only statistical."

In a penetrating essay, "The Critical Reader," Edgar Dale distinguishes between reading the lines, reading between the lines, and reading beyond the lines. "Reading can be taught as training," observes Dale, "with fixed limits and predictable responses. Genuine educational experiences, however, have no ceiling, no fixed boundaries, no terminal points."* It is probably this factor of involvement, more than the others, which discourages genuine critical reading and generates so much of the apathy that exists in schools and communities. Children begin life with a zest for knowledge and curiosity about everything, but somewhere along the way they surrender this inquisitive spirit for the much less disturbing routine of conformity. Perhaps they discovered unpleasantly that a fact which enlightens some people will "burn up" others. They discover that critical people tend to annoy those who prefer the security of convention to the risks and rewards of scholarship. As the Talmud so wisely says, "He who would tell the truth must have one foot in the stirrup." The whole idea of personal involvement is based on acting in conformity with convictions. The heroes of history are those who had such strong convictions that they were willing to make any sacrifice to preserve them.

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Reasoning Through Reading

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TEACHERS OF SECONDARY SCHOOL content areas have two kinds of responsibilities in fostering reading abilities among their students. They must *extend* reading abilities already initiated in beginning and intermediate instruction. They must also *develop* abilities which have not been dealt with in most elementary programs. For example, in the area of secondary English, such development would include the abilities to interpret, to analyze, and to appreciate more complex literary selections.

A Critical Approach to Reading

William S. Gray[1] suggests four main components of the reading process: (1) word perception, (2) comprehension, (3) reaction and (4) assimilation. It is the important concern of the secondary school teacher that the two latter steps in the process are carried through. Development of the reading ability to react and integrate points the student in two directions. The first points toward better citizenship because this is the last *supervised* critical reading some students will ever do. The survival of a democratic society is vitally linked to this ability because intelligent leadership and followership depend on choices made through critical analysis. The second points in the direction of more competent study in college. The college student is called upon to read more material in college than he is in high school. Also, he must probe more complex material more deeply. Through a critical approach, he can be shown to choose that which can be skimmed and that which must be analyzed.

Thus, as the public school curriculum becomes increasingly more specific, there is greater need for a solid relationship between reading and reasoning. The secondary level demands that reading be firmly established as a tool skill by the student. It must also *build* on the groundwork already laid in content areas begun in the elementary grades. In virtually all activities involving reading some provision for student reaction is necessary.

The term "critical reading," used several times in this discussion, is a much maligned one in educational discussion. It seems to be synonymous with "critical thinking," the major difference being one of application. Pingry suggests five different

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emphases that people have placed on the concept of critical thinking.

> (1) Critical thinking as collecting data, organizing data, and formulating hypotheses from data. (2) Critical thinking as use of correct principles of logic and understanding the nature of proof. (3) Critical thinking as criticism of thinking. (4) Critical thinking as related to understanding of the psychology of propaganda and advertising techniques. (5) Critical thinking as synonymous with problem solving.[2]

These five emphases in critical thinking or critical reading can be seen clearly in the demands of several content areas of the typical secondary school curriculum. In secondary school English courses, the student is asked to interpret and analyze various literary selections. In doing so, he must go beyond comprehension of plot and simple character realization in order to solve the sometimes ambiguously presented problems of symbolic representation of an abstract concept. If he is to escape wild, immaterial, or insignificant interpretation, the student must identitfy, collect, and synthesize that textural evidence which supports his thematic generalizations. In this quest, he must escape the illogical inference which may be found in the narrative under consideration. This same student is often called upon to deal with the most difficult of literary comprehension abilities—that of appreciation. The ability to appreciate imaginative literature, in anything more than the most superficial sense of the term, calls for the most sensitive of reactions to the elements of individual word choice, syntax, and broader organizational patterns. Another desired outcome of activities involving appreciation is that the student can integrate his aesthetic reaction to the work of a literary artist to his personal conception of that which is beautiful.

High school students are frequently faced with the necessity of cutting their way through pages of illustrative or descriptive material in order to *find* a main idea. Their task calls for the ability to pinpoint a fundamental thought which is surrounded by a subordinate discussion. Once this idea has been *found,* this same student must *deliberate* the main idea (Gray's reaction step). He must judge the validity of the contention and relate it to its supporting evidence. The ability to separate fact from opinion is a necessary one in dealing with textual discussion as well as in analyzing the propagandistic material produced by modern mass media and the speeches of hosts of public office seekers.

The student of social studies must be ready *and willing* to utilize the ideas he has found and deliberated (Gray's assimilation step). Such information should become a part of his personal awareness and support of his own political, social, and economic philosophies. If he is unwilling to do this, he is not truly developing his reasoning through his reading. It is in the area of social studies, perhaps most dramatically, where teachers in secondary schools have the rather ironic responsibility of developing in their students a certain contempt for the printed page.

There is great need for a critical approach to the reading of modern scientific materials now used in high schools. Of primary importance is the awareness of students to the possibility that certain material is obsolete. The *current* truth of scientific statement should always be held up to scrutiny, and this is an area in which science teachers have a most vital responsibility. In the reading of scientific materials, a student has an opportunity to learn to follow the inductive process of reasoning as it appears in printed (rather than oral or diagrammatic) form. This student will also learn to be *selective* in his reading. From an often confusing mass of data, he must choose that which clearly aids in the formulation of hypotheses; in doing this, he must necessarily *reject* other data. Critical choice has always been an important aspect of scientific thought.

The need for interpretation of symbolic materials, present in all content areas of the secondary curriculum, is a crucial one in mathematics. Here the symbols used have such highly compressed meaning that one brief equation can represent several pages of printed explanation. The student must choose among a wide range of possible referents. He must search painstakingly for the most precise definitions. In many verbal statements and "problems," he must also search for that which is *pertinent*. In such problems one often finds a conscious attempt on the part of the writer to mislead the reader through the use of irrelevant and superfluous statements. Furthermore, many of these misleading elements are brief, concise, and hard to identify. The student of mathematics must be aware of the constant need to examine his material critically and suspiciously.

Components of Critical Reading

Thus it can be demonstrated that reasoning through reading is an ability widely needed in the secondary school curriculum. While the bulk of this article has been devoted to the possible *dimensions* of this ability in content area study, let us conclude with a summary of what can be called common components of critical reading. That is, in all critical reading, several characteristics are clearly identifiable.

1. *Critical reading is a skill which involves cumulative comprehension.* A student must understand, reorganize, and find the main idea of a selection (and in that order) before critical reaction to it is possible.

2. *Critical reading includes two entities—that which is explicit in the selection read, and the use of higher mental processes.* While a major function of the elementary program is to provide for the former, certainly in the secondary school students must develop the ability to use and understand explicit ideas for association, generalization, symbolic revelation, and the like.

3. *Critical reading can be contrasted with literal reading.* In this contrast, critical reading is a process which goes beyond the passive acceptance of ideas and information stated in print. It is a process which assumes active participation of reader with book. With it the reader approaches an understanding of the broad and various *powers* of language as a suggestive, reflective, and evocative tool.

4. *Critical reading becomes a habit of examining printed statements and attacking problems in the light of related objective evidence.* This can only be accomplished through long and consistent use of the ability. The "habit" of using a critical approach is one of the marks of a maturing reader. In such a person, reading has become an attitude as well as a skill. Needless to say, he can use it with versatility.

In what we now rather casually accept as an increasingly complex society, the ability to read printed matter with insight is, and will continue to be, of vital importance. Problems of lack of carefully developed materials at the secondary level and inadequate teacher preparation along these lines will continue to hinder its effective implementation. But the *need* for a critical approach to learning in American secondary schools is both clearly and dramatically evident.

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Laying the Foundation for a Critical Reading Program

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ONE OF the major misconceptions current amongst reading teachers is that training in critical reading should be delayed until later grades. It is true that decoding symbols must precede more complex skills involved in reacting to the meaning of the code, but an attitude of inquiry towards the content of the code must be instilled from the beginning.

The argument that primary children are not capable of making logical or rational judgments is only valid in so far as children are asked to make judgments concerning abstractions, outside the range of their actual or vicarious experiences. Moreover, there is increasing evidence that the ability to read critically does not develop automatically as a result of general development of reading skills. The point of inquiry, the art of self-posed question, must be developed from grade one.

Consideration of three main facets seems to be important: understanding the range of development of verbal comprehension of which children are capable at this stage, cultivating creative questioning on the part of both the teacher and the reader, and providing a variety of opportunities for expression of critical reaction.

The Development of Verbal Comprehension

Traditionally primary grade children have been characterized as being concerned with the "here and now." Recent studies have shown that the understanding of children can be broadened to include concepts outside their own egocentric experience through exposure to situations which demand that they extend their concepts. A corollary of most of these studies has been that the experience becomes more fruitful if the child can be led to verbalize his ideas.

Undoubtedly too, a child has a much greater listening than reading comprehension at this stage. His vicarious intake of ideas in school is largely through listening and reading, but in the early grades his reading is limited and his listening is extensive. The child's exposure to books should not be limited to his own reading but teachers should read informative material as well as stories to children. Children are noted for their constant "why" questions, but only gradually do they learn that books are a major source of answers.

Though most of the words that a child meets in his early reading books are within his listening vocabulary, it should not be taken for granted that he understands the concepts behind the words he reads. A constant check on the accuracy of his understanding and increasing awareness of the function of words is important.

Studies of oral language development indicate that children use complexity of speech patterns not found in reading material. Unconscious usage, however, does not imply that they can understand similar complexities when used by others. At this stage, too, children are beginning to classify their ideas, and to link one concept with another. Frequent discussion, not merely the recapitulation of facts, but talking about the various possible ideas which are inherent in what they read or hear, must be fostered by primary teachers.

Creative Questioning

The posing of provocative questions by the teacher about the reading matter is still one of the most effective ways of stimulating children to think as they read, and to think about what they read. Unfortunately, a great many questions asked by reading teachers check repetition of irrelevant facts rather than stimulate productive thought. Five types of questions appear to be essential to developing a critical attitude towards what is read.

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*Reading and Inquiry, IRA Proceedings, 10, (1965), 112-114.

1. Since it is necessary to ensure literal understanding is complete before we can begin the rudiments of critical reaction, the first level of questions should be designed to check literal comprehension. These would include the recall or recognition of detail, of the sequence of the events, or the understanding of the appropriate meaning of the word, to identify things mentioned most frequently.
2. In order to develop the synthesis of the author's ideas, questions which allow the child to say in general, and if necessary in some detail, what he has just read, should be presented.
3. Next queries to see if he can give a judgment about the truth or reasonableness of what he has read in the light of his own experience. This will involve the ability to anticipate outcomes, to make "an educated guess" to draw simple conclusions or inferences; to transcend the bounds of a situation, but to recognize the limitations imposed by the writer.
4. Even young children can realize the author's tone and mood, the type of language he uses if questions are posed at their level.
5. Finally, even primary children can make intelligent comments about their reading, through questions which elicit comparisons with their own experience, or the author's purpose of reacting to the author's style.

These bases for questions may sound pretentious for children in the early grades but it is possible to extend their thinking in these ways.

While the teacher can do much to stimulate thinking by provocative questions, the most important kind of question educationally is the self-posed question. Questions posed by the teacher do not always cover the special needs of difficulties peculiar to each child, Children learn to think for themselves best when solving their own problems. Consequently, to get children to pose their own questions is even more effective than those suggested by the teacher. Children can be encouraged to do this as they read first orally, later silently. With prompting, pupils learn how to query the sequence of actions, or examine the traits of a character, or to check the accuracy of information. Moreover this is also an essential step in teaching them how to study. Creative questioning then is still one of the most effective methods of both teaching and learning which operates in our schools.

Expression of Critical Reaction

General discussion stimulates pupils to make simple comments about their enjoyment of a story, or to make comparison with their own experiences, or to judge the degree of realism present in the material.

Such discussion can lead to questions about the author, the tone and mood of a story, the authenticity or accuracy of the characters. Children may compare actions, speech, and underlying motives of characters with their own. From the beginning it is important to admit that there are different possibilities in interpretation, that all characters in all stories may not appeal to all children, but even at this early stage children should be encouraged to back their opinion with facts.

Children may gradually be led to the understanding that authors differ in their purposes for writing, that some write to entertain, some to inform, some to persuade and some to arouse feelings. Moreover, many children can make excellent judgments in assessing how far an author succeeded.

Children may be able to formulate unconsciously the difference between two major types of content, the one factual and the other imaginative. Factual material demands the interpretation of the precise meaning of the author, and evaluation depends upon the readers' knowledge of the subject. Imaginative material on the other hand permits the reader to attach ideas and meanings of his own, but these must always be within the framework of the author's theme. Too often questions and discussion at the primary level permit children to indulge their fantasies without coming to grips with the thoughts of the writer.

As soon as they are able, pupils should be encouraged to write their comments. The following criticism by Mike, a grade two pupil in Saskatoon, illustrates that critical reading can be developed early.

> You should not believe everything you

> read because you may read a book that says an ostrich grows to be two feet tall and weighs sixty eight pounds which is not true.
>
> I have found two authors that made a mistake. They are Neurath who wrote the Wonder World of the Deep Sea and Mary Taylor who wrote Animal Travellers.
>
> Neurath's mistake was that she said that the sea-cucumber was the home of two little black worms. But Mrs. Bumphery and the class found that Neurath was wrong because they found in the Comptons encyclopedia and Mr. Hume who has an important job in the office down town thought the sea-cucumber was a thing that looked like a cucumber with tentacles. He checked it in the Britannica and found he was right, and the Comptons said the same. Mary Taylor's mistake was that she said everything gets out of the ants way when they are on a march. But we found in a book called Jungle Animals by Frank Buck which said a pangolin, which is an anteater which does not get out of an ants way.
>
> Podondorf said that all animal babies that are born alive drink milk. But some tropical fish have their babies born alive. These fish certainly don't have babies that drink milk.
>
> All encyclopedias are reliable except the Golden book encyclopedias which sometimes exaggerates a bit.
>
> I have found two authors that I think write good nonfiction books. Every book they wrote I read is true so far. Their names are Frank Buck and Zim.

It will be noted that Mike backs his own knowledge with reference to outside authorities, on personal knowledge as well as the authority of the printed word. Mike, Mrs. Bumphery, and the class have consulted not one but several reference books to check facts. And this is capped with Mike's irrefutable logic that "an anteater does not get out of an ant's way," nor can tropical fish drink their mother's milk. Evaluation of the comparative reliability of the encyclopedias is included, and praise for authors who are accurate. What better evidence that critical reading can be taught early do we need?

Conclusion

Why is it that many high school students fail to develop their potential for critical reading? Most high school students have either an undue reverence for the printed word or give a mental shrug when faced with evaluation of what has been read. Perhaps this halo around authors and their writings has arisen because we have not attempted to teach critical reading early enough. While we do not want to develop readers who are carping critics, and who "murder through dissection," we should be producing healthy sceptics who seek not to find fault, but have learned in Dryden's terms "the art of judging well."

Critical Reading in the Primary Grades

HELEN W. PAINTER*

IN HER BOOK *I Will Adventure* Elizabeth Janet Gray (*4*) has her main character, Andrew, scorning study and school. He expresses his feelings to his new friend, an actor and playwright named William Shakespeare. Shakespeare says to him: "Ignorance is a curse, Andrew, knowledge the wing by which we fly to heaven. If you get a chance to pluck a feather from that wing, make the most of it."

Surely in our world today the informed individuals who can read and think are of vital importance. Kathleen Hester (*6*) writes about a boy in second grade in Puerto Rico. He read: "We wish to read good books, in order not to be ignorant, in order not to be slaves." What better reasons do we need for critical reading?

What is critical reading and how early can we teach it? Dr. Nila B. Smith (*8*) has pointed out the popularity of the term critical reading today and the fact that many people are using the term to refer to many skills in reading. She sees three types of thought-getting processes: (1) literal comprehension, getting the primary meaning from words; (2) interpretation, getting a deeper meaning from words in addition to simple, literal comprehension; and (3) critical reading, including the first two but going further in involving personal judgment on and evaluation of the "quality, the value, the accuracy, and the truthfulness of what is read." Critical reading involves critical thinking.

How early can we start teaching critical reading? Is it possible in elementary school, particularly in the primary grades? Research findings reveal that critical thinking can be taught from kindergarten through college. Dr. Leo Fay (*3*) points out: "Actually children at ages well before those at which they enter school are able to make valid judgments in relation to their experiences and their maturity levels."

Critical reading *in its highest form* is complex, and a young child usually would be unable to do such involved reading. Second graders may be critical readers, Heilman (*5*) says, but "no one would suggest that their interpretation of the Constitution is adequate for our society." But they can evaluate in terms of their maturity, their backgrounds, and experiences. Stauffer (*10*) tells of a six-year-old questioning how three ducks in a story could be "long parade of ducks." The child knew ducks, had seen them walk in single file, had reached a reaction to *long* and *short*, and could figure out what a parade was. He obviously was doing critical thinking.

Are teachers teaching the skills of critical reading? In the Harvard

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**The Reading Teacher*, 19, (October 1965), 35-39.

report of reading in elementary schools, *The First R* (*1*), the staff reported that not until Grades 5 and 6 did school systems estimate "considerable" attention was given to critical reading, a situation "very much in keeping with the prevailing opinion among administrators and teachers that only older children are able to think and read critically." More than half of the school systems devoted "little" or "no" time to such skills in Grades 1 and 2. In observations in the classroom, the field staff rarely found teachers trying to help children in those activities that contributed to critical reading. Therefore, among their recommendations the authors proposed that "a definite program be initiated in which all children are taught critical and creative reading skills appropriate for their development, and that teachers find ways to stimulate thinking beyond the literal meaning of passages read."

It is apparent that critical reading skills do not appear automatically but must be taught. All authorities agree that a teacher must so direct the reading of children that they can think critically. A teacher herself must be a critical reader and thinker. She must give practice in the skills. She must remember that "critical thinking abilities are difficult and they are slow agrowing" (*7*). She must help children gain background and experiences. She must encourage critical thinking and be pleased by the questioning of children, not annoyed by it. She must create the setting for critical reading. Too often a teacher asks merely for simple recall.

A teacher must be skillful in teaching critical thinking: we want to develop questioning attitudes in children, but we do not want teachers or classes always to be unduly suspicious, to question everything and thus deny themselves opportunities to lead lives full of satisfaction (*2*). A teacher must use logic in promoting sound and proper attitudes.

Exactly how, then, can critical reading and thinking be taught? Probably the best way is to guide classroom discussion as it occurs. Dr. Smith writes (*8*):

> Rarely should a teacher plan to "give a lesson" in critical reading, particularly in the primary grades. More direct work can be done at times in the upper grades. Leads into critical reading activities usually arise from discussion of reading content.
>
> Children themselves often offer leads to critical reading. The wise teacher keeps herself ever on the alert for such leads, encouraging them with commendation for good thinking and stimulating further research for facts with tactful questions or remarks.

Surely, the primary school curriculum provides a fertile field for critical thinking. Basal reading selections and individual books, as well as materials in content fields, offer many opportunities to a teacher. Critical reading may be taught to a large or small group or to an individual pupil.

It is obvious, therefore, that critical reading is possible with young children, but that the amount and kind of such activity rest upon the teacher. To assist teachers, here are some examples and applications of critical reading at the primary school level.

Primary school children can question whether a situation is truth or *fantasy.* Russell (7) mentions first graders making such distinctions after hearing "The Day It Rained Cats and Dogs." Primary grades include the age for the start of interest in fairy tales, and children can be led to distinguish between fantasy and truth. Could someone sleep for a hundred years? Could a pumpkin become a coach? Could such events take place? Why or why not? We can help children to look for clues that signal a fairy story, such as the once-upon-a-time beginning and the fairy prince and princess.

A child may decide if action is plausible in stories not labeled fairy stories. Look at Phyllis McGinley's "The Horse Who Lived Upstairs." Have you ever heard of a horse living upstairs? It is possible? How does the author make the situation seem plausible? Are animals, insects, and birds able to talk, as Wilbur, Charlotte, and Templeton do in *Charlotte's Web?* Why or why not? Is there a land where the wild things are?

Young children can be led to judge the competence of an author. Chibi could distinguish the cry of crows under different circumstances. Can this be? Laura Ingalls Wilder in *The Little House in the Big Woods* tells of Ma and Laura going out to milk the cow after dark and finding a bear in the barnlot. Did bears come to farms then? What would your clothes, your house, or your parents' work have been a hundred years ago? Why did not Laura's father take an automobile or jet plane?

Such materials call for checking on an author. Is the author writing about what he or she actually knows? How can we find out? It is unfortunate that notes about authors and how they happen to write their stories do not appear somewhere within the covers of books to offer quick proof of competency.

Children can judge how fair and just another is. Should Peter Rabbit have been punished, or should Ping have gotten a smack for being last? Is an author right to make such things happen? Why do you think so?

Characters can be judged as life-like or real. Does Fern do things that you would if you owned Wilbur? Is Templeton just what a greedy, selfish rat ought to be? Why does the little old man set out to find a cat? Why did he want to please the little old woman?

Perhaps discussion can lead to some understanding of the motives of characters, why a giant was bad and why a hero's deeds are good, for example.

Sometimes a title can be appraised. Children can judge such a title as *The Courage of Sarah Noble.* Does it seem a good one? Why? How do you think Sarah will show her courage? Was she brave? Would *you* have been? Children might judge a title by deciding whether it gives the idea of the story and sounds interesting.

Children can judge pictures. Children can do some critical thinking about the pictures in a book, though they are too immature yet to evaluate the technical quality of the art. They can see if a picture is true to the story. Most children are very much aware of details and catch discrepancies before adults do. One first grader was much disturbed at a picture of a little girl in a clean dress, because on the previous page the girl had fallen into a mud puddle. How, then, could her clothes be clean? As Lynd Ward once said, illustrations should be part and parcel of a book.

By being exposed to good illustrations, even young children can begin to build standards of art appreciation. They can offer some good reasons for their preferences.

Children can judge likenesses and differences in books dealing with children of other lands. Why did the boys and girls make fun of Chibi? Why did Ping live on a houseboat? Why did Pelle take a boat to the store and pay for the dye for the wool with a shilling? Family stories of people of other countries or races may lead to animated discussion and serious thought.

Various types of comparisons can lead to critical thinking. A child may compare biographies about the same person for details and authenticity, for example, the d'Aulaires' *Abraham Lincoln* with another book or TV program about Lincoln. A book, *Little Toot,* may be checked against a film or filmstrip in deciding how much the two are alike. Different versions of a story (or song) may be compared, as *Frog Went A'Courtin'* and "The Frog He Would A'Wooing Go." Some very capable children may check the original copy of a book against a simplified copy and try figuring out why the story has been made easier to read. The popularity of book clubs, even for young children, also leads to critical evaluation.

A child should be ready to evaluate his own oral or written reports. Even a young child, under guidance, can be taught to look up material for a report and judge what material is pertinent and what sources are best. Second and third graders are reading more widely than ever for information, and they must be led to dictionaries and encyclopedias. They must learn to check on accuracy. Even small children must be led to examine copyright dates in order to determine if material is up-to-date, an aspect of critical evaluation particularly important in content areas. With dictionary work a teacher must lead her class to develop awareness of multiple word meanings, that the right meaning may be chosen for the material being read.

A teacher may teach children to detect propaganda. One of the most common means of propaganda is television. According to David Russel (*7*), many children before starting school have developed critical thinking abilities with regard to this medium. He cites the five-year-old saying with a smile, "*All* the TV ads say they have the best breakfast cereal." While more chances are offered in the upper grades, probably we can teach children to detect propaganda as early as Grade 3 and help them recognize some of the techniques (*8*).

The child must be alert to figurative language. Figurative language is common. Many such expressions as "It's off the record" constantly confront the child. The young reader who has been taught to think critically will ask what the material really means.

A child can become alert to words that arouse emotions. A child may find a poem about rain personally pleasant. If he wants to play in the yard he may be dismayed by rain, however, just as may his mother who wants to hang the washing outside. He can be led to realize that a man whose fields are drying up may be delighted with rain. Words arouse emotions. Some understanding comes when meaning can be brought into the critical thinking of the child.

Finally, a child will select books according to his preferences. How does a child choose reading materials outside school? Spache (9) say that children begin as early as the primary grades to offer comments about their enjoyment of books. They can compare events and experiences in a book with their own. They can be led to think critcially about the author, what he wants them to see as his purpose, what words he uses, and what his characters are like. Evaluative skills and appreciation call for the personal involvement of each individual.

In summary, children of primary grades will be able to think critically about those situations which are a part of their own experiences or can be related to them. Many children will not do critical reading or thinking unless the teacher directs or challenges them. Surely critical reading by children calls for teachers who are critical thinkers themselves.

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Implementing a Critical Reading Program on the Primary Level

A. STERL ARTLEY*

HOW DOES the primary teacher teach critical reading, or critical thinking based on reading? There seems to be no royal road or short cut answer to this question. Regardless of grade, the essential process is that of raising questions or setting up situations based on the reading that requires an evaluative response, and then by a process of guidance helping the child think his way through to an answer.

The questions that call for a judgment or evaluation are quite different from those calling for the reconstruction of the writer's ideas. In evoking comprehension one asks a question the answer to which is found in the text, either stated or implied. For example, the answers to the questions, "What did the girls prepare for lunch?" "How do you know they followed Mrs. Stone's recipe?" come from the text of a second grade story. In one case the answer is stated on the second page; in the other it is inferred from what is said. But in both instances the answers are based only upon a comprehension of story content. However, the question, "Could you think of another way to solve Stacy's problem? Which do you think would have been better, yours or his?", calls for an analysis of the problem situation, and alternative solutions, and an evaluation of each against a criteria of "goodness." Here the child goes beyond comprehension to a critical reaction to a particular situation.

Let us now look at several situations on various primary levels and take note of the kinds of questions that might be posed to evoke a critical response as well as the process in which the reader engages. On the prereading level the first interpretive picture story in one readiness book shows three children riding bicycles and a toy car on a collision course. The teacher asks, "What will happen if all three children keep on going fast?" Based on the criteria of past experiences they pose an answer. Then the teacher asks, "What might be done to prevent a wreck?" Based again on a criteria of experiences the children come up with several possible solutions, each weighed by the group as to its effectiveness. By turning the page and reading the next picture they are able to see how the author resolved the problem and they proceed to evaluate their solution against the author's. The beginnings of the evaluative process are much in evidence at this early stage.

First graders are building an experience story related to an activity in which they have just engaged. The teacher says, "What would make a good beginning sentence for our story?" Several are suggested and against a criterion of what makes good beginning sentences for an experience story, one is selected by the children for the teacher to write. In fact, we could say that any reading situation, regardless of level, that gives the children an opportunity to face a situation having several alternatives, to weigh evidence, to face beliefs, to examine facts, "to examine with a critical eye," and to come up with a reason, a judgment, a conclusion, or a solution based on defensible criteria is one that provides an opportunity for critical reading. The differences from grade to grade are differences in level of maturity and quality of thought rather than the type of process in which the reader engages.

Or again on the second grade level after reading the fanciful story of "The Little Train in a Hurry," the teacher asks, "Was this a true story or a make-believe story?" "Why?" "What is the difference between a true story and a make-believe one?" And at this point, without calling it such, the children begin to formulate their criteria by which other stories might be evaluated. I hope in directing the reading of this story the teacher might go the extra mile and ask, "But why do we like to read stories where engines, and pigs, and geese talk?" For this will give some bright Betty a chance to reply, "Maybe because they give us a chance to see ourselves and some of our own foolish ways." For the little train in a hurry finally had to admit:

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*Reading and Inquiry, IRA Proceedings, 10, (1965). 111-112.

> I didn't go as fast as the horse.
> I didn't go as fast as the bird.
> But I went as fast as I could.
> That is all any train can do.

The reading that children do as it relates to their social studies units, their science projects, and their weekly news magazines—any kind of reading—gives the teacher a chance to initiate questions of the open-end type beginning with, "Do you think . . . ?" "Why did the author . . . ?" "If you had been . . . ?" "What made you say that . . . ?" "Do you suppose . . . ?" "What is the evidence for . . . ?" Following his initial response to questions such as these the teacher's next question is, "Why?" The common element in all these situations or questions is that they ask the child to look at the facts or ideas in the story or article, and make some kind of evaluation and express an opinion or make a judgment. Not only is the reader asked to make an appraisal, but with the question, "Why," he is asked to examine and come forth with his criteria for making it.

It appears to me that in the teaching of critical reading one of the most important understandings to be developed early in children is that for a judgment to be valid it must be based upon defensible criteria. The teacher's questions, "Why do you think the way you do?" or "What are your reasons for . . . ?" may point up the fact that the reader either has no basis for his evaluation, or that the basis is very tenuous. The primary grades are not too early to begin the development of these kinds of understandings. Further extension of this basic understanding will lead the reader on more advanced levels to recognize the fact that at times his judgment must be withheld until he has evidence to substantiate it. Growth in this direction will prevent the many quick trigger opinions that adults give and the judgments they make on the spongy ground of bias and prejudice.

Building Initial Critical Reading Abilities

WILLIAM K. DURR*

CRITICAL READING IS A relatively recent term which has evolved from an increasing awareness of the importance of the reader's reacting to, or thinking about, ideas expressed in print. While there is no universally accepted definition, in this article the term will be used to mean judging printed statements as distinct from evaluating literary merit.

Levels of Reading

Let's exemplify critical reading on a ladder of reading skills by examining some skills which precede it. At the very simplest level, we are concerned that the child makes a direct decoding of the author's statements. This is what most teachers mean by "comprehension." For example, the child reads a sentence like this, "When the big dog barked, the little kitten started to shake and rolled up into a small ball on the ground." After the child reads this, we may ask, "When did the little kitten start to shake?" "What did she do next?"

This, of course, is an essential but low level of comprehension. It is a level which asks the child to tell us precisely what the author said; however, the reader must be able to do this before he can go on to more advanced levels.

Using the same sentence, now, let's go to the next level. This is the level of determining what the author is implying —what he is trying to say to us "between the lines" without actually stating it. In this sentence he expects us to make several implications. He is strongly implying, without actually stating it, that the kitten is frightened. He implies that a barking dog will cause a kitten to be frightened. He implies that the kitten is rolling into a small ball to protect herself. None of these are actually stated, but, as mature readers, you probably made all of these inferences just as the author intended.

The young child, however, needs to be taught to make inferences, and so we ask him, "Why do you think the kitten started to shake?" and "Why do you think the kitten rolled into a small ball?" This is a level beyond the mere precise decoding of the author's sentence and another necessary step toward critical reading.

Let's go to the next level now, the level of critically analyzing what the author says or implies, and use the same sentence for our example. Here we call for judgments about the author's thoughts rather than merely determinations of what those thoughts are. For example, we might ask the child, "Do you think that a kitten would shake when she heard a dog bark?" "If a kitten was scared by a dog's bark, do you think she would act the way this kitten did?"

Here we use the child's ability to comprehend, but we are going beyond that and asking him to make judgments about the feasibility of what the author states and implies. We are asking for critical analysis rather than mere acceptance.

Many opportunities arise for promoting critical evaluation in the classroom. If we understand critical reading and we believe in its importance, we will seize these opportunities as they arise. Beyond this, however, we can take direct steps to nurture and teach this ability.

Promoting Critical Analysis

We can, arbitrarily and for convenience only, examine procedures for promoting critical reading ability under two headings. One of these involves general classroom procedures and the other concentrates on specific, planned techniques.

General Classroom Procedures. Under the heading of general classroom procedures, it is impossible to overestimate the importance of using a variety of sources for information rather than relying entirely on one which serves as the sole authority for whatever its topic may be. My friends in social studies and science tell me that most of the classrooms they visit still use a single book as the sole source of content in each of those areas. When the children study natural resources, for example, their views on water usages are derived from *the* book. They seldom hear the views of an ardent fisherman compared with those of someone who works for the state conservation department. They seldom compare the facts that can be presented—even at a primary level—about the effects of dumping sewage into a stream with the sewage that they can actually see being funneled into almost any stream they visit. They read in *the* book that water floats logs and, under certain circumstances, that it can be used to generate electricity. Then they go on to the next chapter.

**Vistas in Reading, IRA Proceedings, 11,* Part 1, (1966), 55-58.

I am not suggesting that very young children can critically analyze in depth the problems that beset our society. I am suggesting that they must have a chance to compare, to analyze, if they are going to have a foundation for critically analyzing anything at more mature levels.

The important characteristic of the classroom is an atmosphere where children are encouraged to explore and reach decisions for themselves rather than an atmosphere in which children are viewed as dry sponges soaking up the flood of information given to them by the teacher.

So far, our exploration of critical analysis has tried to lead to two major conclusions. First, we have examined it with the hope that this analysis will lead you to recognize and seize incidental opportunities which will arise in your classroom. Second, we have suggested the importance of a classroom where children are required to explore information from various sources rather than rely solely on a single source.

Exercises for Children. Let's explore this now through some examples of specific exercises which you can use with children.

(1) *Statements of fact and opinion:* At an adult level, we are continually bombarded by written and verbal opinions which are accepted as facts by the receiver. The adult who reads one newspaper describing "our country's vacillating approach" may not know that his other newspaper which discusses "our country's consistent efforts" are both dealing with exactly the same approach. The difference is in the mind of the writer as he tries to make his opinions our opinions.

While we do not expect mature depth in the first days of school, we can begin building a foundation culminating in a mature citizen who can analyze for statements of fact and statements of opinion. At its very simplest beginnings, we start in kindergarten and first grade helping children distinguish between fact and fancy—between stories describing incidents which could have happened and others which are "making believe."

For example, here is a brief excerpt from a first grade story. "Willie was a little kitten. He did not know where to go. He wanted a home with a fire and a bed to sleep in. But there he was out in the cold with no home, no bed, and no fire."

Now, here is another first grade story from the same basal series. "Mrs. Blue called, 'Here kittens, why are you behind the box?'

" 'We don't like this house,' said one of the kittens. " 'There is no fire to sleep near.' "

A discussion of the second story after the children have read it, should go beyond just asking, "What reasons did the kittens give for not liking their new house?" In addition, discuss with children, "Do you think this story could actually have happened?" and, of course, the all-important, "Why do you think that?" And, "Why do you think the story about Willie could have happened, while this one must be make-believe?"

First grade children have a listening ability which far surpasses their ability to read those thoughts in print. Because this oral ability is closely aligned to, and serves as the foundation for, later ability to read, we can use it to provide a base for critical reading skills at later grade levels.

Try this with your young children. Say to them, "You know some of the things we read and hear are given as opinions. That is, they are given as what the speaker or writer thinks about something. Some of the other things we read and hear are given as facts. That is, the speaker is telling you, 'This is not just what I think; this is the way it is.' Let me show you how these are different. Listen, 'We can buy spinach at the grocery store.' Is that given as a fact—as a statement of something that is true? But suppose I say to you, 'I think that everyone should eat spinach twice a day.' Is that given as a fact or as somebody's opinion —what somebody thinks about somethings?"

Your first examples of opinions should be so obviously opinion that everyone can agree that they are. These children have been taught for years that any words coming from adults are to be accepted without thought. While they haven't always done so, it may take them a little while to get the idea that we don't always expect them to blindly accept.

After you have once planted the seed of opinion versus fact, you and the children can devise other statements which are less obviously opinion. A discussion of these can provide invaluable groundwork for later efforts which will help these students make these essential distinctions as they read.

(2) *Recognizing assumptions:* Another essential ability for adult readers is the ability to recognize assumptions. Here is a brief, hypothetical, but rather representative passage. See if you can determine the assumptions that the author makes.

> *Since children in this country are at least three years behind those in most European countries in achievement, the need for educational reform becomes increasingly evident. As we search for the causes of the vast gap, we should look first at our teacher training institutions. The educationist's rejection of advice from his colleagues in academic areas is one reason. Professors of discipline areas who are concerned with what children learn should have a strong voice in teacher training.*

Now, let's examine some of the assumptions that the writer makes. First, the writer makes the unsupported statement that there *is* a vast gap in education. Such a statement, which serves as the basis for his following arguments, requires objective support.

Second, he makes the statement that educationists reject advice from their colleagues in academic areas. Again, this is glibly made but unsupported by the writer.

Third, he implies that educationists are not concerned with what children learn. This is a little more artfully hidden, but here, too, is an example of writing which denies the critical reading ability of the audience.

So what *does* the statement contain? Several unsupported statements cemented together with the opinions of the author.

We cannot expect a primary grade child to critically analyze such a statement as we should. We can, however, build a background which will ultimately lead to that ability. For example, in the upper primary grades you may approach it in this way with your pupils.

"Sometimes when we listen or read, we come across a statement which is supposed to be true and, from that, the speaker tells what will happen next. If the statement does not turn out to be true, then what is supposed to happen next may not be true.

"For example, listen to this statement which a pupil made, 'When mother lets me go to the store today, I am going to get a chocolate ice cream cone.' This child was saying that he would get a cone, but it really depends on whether it is true that his mother will let him go to the store. If he is mistaken about his mother's letting him go to the store, then the rest of the sentence will not be true.

"Often when we hear statements like this, we don't stop to think about them; but, sometimes, if we do, we can find the part that must be true before the rest can be true.

"Let's try a few of these just for fun. Listen, 'When Daddy gets his new boat next week, I'll go for a ride in it.' What part of that must be true before the rest can be true?"

You can make up other sentences which require the children to critically analyze assumptions. For example, "After I get the toy gun for my birthday, I'll play spaceman with you." Or, "Since I will stay up late tonight, I'll be able to watch Batman."

Of course, there are a number of unstated assumptions in such sentences. For example, in the last sentence, in addition to the stated assumption that the speaker will stay up late, there are the unstated assumptions that he has access to the television set and the right to determine which channel it will be turned to. Before pressing for additional assumptions, however, be sure that your pupils have taken the first basic step of recognizing the stated assumptions.

In addition to making up examples, you can locate assumptions in various materials that the children read. For example, in the 2^1 reader for one basal series, there is a story about Katy No-Pocket. You may recall that Katy, as her name implied, had no pocket to carry her baby, so she checked with other animals to learn how they did it. When she tried to carry her baby on her back like a crocodile, she made the assumption that he would be able to stay on when she jumped. Unfortunately for the slightly bruised baby, this proved to be a false assumption. Once children have developed the idea of what an assumption is, they can find many similar examples in the materials that they read.

While using the word "assumption" here, I have avoided using it in my suggested statements that you use with the children. Whether you do or do not use a word like "assumption" with your children must depend entirely on them. As a general guide, we should usually use such words when our pupils can be led to understand them. Words are the verbal tags for thoughts; and, if your pupils are mature enough to comprehend the general idea or thought behind noting assumptions, there is no reason that they should not have the verbal tag to apply to it.

Ways and Means of Improving Critical Reading Skills

MELVIN HOWARDS*

CRITICAL reading is the logical extension of the structural skills, e.g., previewing, finding main ideas, details, outlining, summarizing, guide words, skimming, and scanning. That is, one cannot teach the critical reading skills such as drawing inferences, making generalizations, detecting propaganda, interpreting imagery and symbolism, etc., without having learned how to apply these interdependent structural skills. For example, when teaching previewing, one is setting the stage for critical reading, unless one teaches, as so many do, by merely listing the things to look for and then concluding the activity. When the student is instructed to note the title, author, date, and publisher, for example, we can note that frequently the title does not tell too much about the contents of the book, but that it does give the general area of concern. *Pocket Book of American History* as a title tells us two important things which may distinctly influence our evaluation and analysis of the book. Pocketbook may mean an abridged version—shortened, not complete, something may have been deleted. American History tells us that we shall cover about 360 years between 1600-1960. At the outset we have some idea of what to look for. Previewing and the other structural skills help the reader to be more selective—and that, *selection,* is the heart of intelligent reading. Being able to discriminate important from unimportant facts, details, ideas, and concepts is at the heart of critical reading. This skill serves as a magnet to the reader, drawing him into the matter and clearly defining for him foreground from background, as it were.

But there is more to previewing as a step in critical reading. If we check the date of a book or article it tells us whether it is up to date or not. The classic example relates to the Charles Beard U. S. Histories which have been so very popular in American schools. Up to 1939 Charles Beard was pro FDR and the New Deal, and after 1939 he was anti FDR and the New Deal. This bias came out in his writing, as it must with any writer. Here the date points out this bias for the reader, even before he has read the material.

Another phase of previewing as a step in critical reading is the preface or introduction. What do we find here of relevance to critical reading? The preface is similar to those drab sections of master's and doctoral theses which are called (poetically) *"Need for the Study."* And in such sections, as in prefaces, we find the reason the author wrote his particular book—what his approach and general bias may be, and a sketchy outline of how he works out his plan of organization. Then on we go to the table of contents in which we find, typically, an outline of the book, chapter by chapter. And this tells us that these chapter titles represent to the author the key topics to be discussed in this book. It reveals his general thinking pattern. So without belaboring this aspect of the structural skills as a foundation for critical reading skills, let us conclude by saying that these skills lead the reader step by step to greater and greater selectivity and to an awareness of the organization and structure of the material to be read. When he learns how to find a main idea and its supporting details, he is learning further selectivity and discrimination of the important from the unimportant. This is critical to learning how to evaluate and analyze written matter which is the essence of the critical reading skills.

The critical reading skills, like the structural (study) skills, need some reinterpretation themselves. That is, as we teach them these skills are all meanings skills, not mechanical devices for "unlock-

Reading and Inquiry, IRA Proceedings, 10, (1965), 121-127.

ing" anything—meaning least of all. Just as intensive phonics does not guarantee (in fact, often discourages) better understanding of ideas and concepts, neither do isolated study skills or other mechanistic approaches to learning how to think in reading. After all, what is it we want the reader to do? We say we want him to be able to understand what an author is saying and what that may mean in some broader context. But we proceed, too often, as in phonics, in simplistic isolated exercises rather than in meaningful wholes of knowledge. How do we understand written matter and then go on to be able to interpret it critically? In order to understand we must see the relationships among words, ideas, and concepts. How do we do this? One way is by learning the interrelationship of these structural skills which show us, in X-ray fashion, exactly how the author thought his way through the subject. We follow his organizational patterns and we note which points are emphasized and which elements go with which other elements to make some kind of sensible whole.

There are other important factors in building and improving critical reading skills. One of the most useful, but rarely mentioned, is the type of classroom or instructional environment one creates for any kind of teaching. In teaching critical reading skills it is necessary to create an atmosphere which is loaded with meanings and suggestions and opportunities for interpretation. Humor, wit and satire, sometimes even sarcasm (used correctly) can help to build a sensitivity in students for watching for the irony, the incongruous, etc. Perhaps you noticed while the previous speaker was giving his interesting talk, the music being played was "Exodus." What an opportunity for interpretation there! Incidentally, this is one reason why so many students like *Mad* magazine which, among other things, focuses many of its satirical barbs at propaganda, particularly as used in advertising. The teacher's attitude, in allowing *Mad* magazine in class, or other satire, sarcasm, and wit, is critical to developing this type of general sensitivity. It is simply not a matter of presenting a body of skills and saying, therefore, that you have taught critical reading, or anything else for that matter. The very walls of your room must exude meanings and awareness to innuendo and relationship. Books, materials, and skills alone will not suffice, not if you really mean to make your students highly sensitive and alert to propaganda, to implication, and to logical errors in thought.

Since critical reading is what all reading is about, one can readily see how to tie in the various skills already alluded to. Let me mention just a few of the specific activities we have used with success over the years in the way of improving critical skills, at all levels. Perhaps I should digress briefly to say that these skills, structural and critical reading skills, are to be viewed on the vertical plane not the horizontal. Many of the rudiments of structural skills and critical reading skills can be taught in the primary grades using some of the TV ads about plastic electronic monsters which the children soon discover really do not look as big in the store as they did on TV and which fall apart quickly. This kind of awareness can be highlighted and used to build in the foundational background for more sophisticated critical reading skills later. In teaching youngsters the differences between the real and unreal, the imaginary and the actual, fact and fiction, one can readily see the application of several basic critical reading skills. The child can be questioned as to whether certain superstitions or misconceptions could be proved. How? Do the arguments make sense? Children love humor which can readily be slanted toward this end of critical analysis.

Let us get back to some specific techniques or gimmicks if you will (although that is certainly a loaded term, connotatively and filled with propagandistic potential). The use of ads from magazines, newspapers, or even TV ads, is one concrete way to teach the various propaganda techniques and to go into the deeper significance of these techniques. Once the basic techniques have been learned, one can have the students write their own ads. It is amazing how perceptive they can be when they know they are free to open up. Through this process of learning the propaganda techniques and using the ads, one can readily slip into logic and syllogisms as a way of demonstrating the erroneous conclusions drawn by these ads. In teaching the card stacking technique one can readily insert something about statistical fallacies and the weakness of the design of "research" reports in terms of variables and controls.

During the 1960 election campaign, we did an interesting and comprehensive research on the way major newspapers around the country were handling the presidential campaign. Each student took one newspaper for 30 days and carefully analyzed the amount of news space, feature space, editorial space, picture space allotted to each candidate. We had 12 newspapers representing every part of the country and we made tabulations of actual lineage devoted to each candidate. When the month was over we came up with a thorough review of the biases expressed by these papers. After the election, we checked the returns for those cities whose papers we had studied. This was to see if we could note any appreciable influence of the newspapers on the voters. It was a fascinating project and many things were learned above and beyond merely how much bias each paper had, or who supported whom. We learned about the way certain newspapers slant news stories in line with editorial views and how some chains of newspapers sing the same songs with the same lyrics in all of their papers.

All of the interpretation skills, especially those used in reading literary material, are intimately related to the critical reading skills. Bias and connotative loading is evident in poetry, short stories, plays, and novels. In this connection, when working with the disadvantaged, one can utilize street corner speech for purposes of teaching imagery and connotation. Words such as "skut" for girl or "cool" for hot, and "nitty-grit" for earth can all be used as launching pads for verbal journeys into etymology, variant meanings and bias.

To summarize this brief presentation, let us say that to raise the level of critical reading skills, at all levels, requires a solid foundation of structural skills and an environment which exudes and generates discussion, debate, and awareness of all kinds of relationships, with key emphasis on selectivity.

Distinguishing Fact from Opinion

LEO M. SCHELL*

IT IS CUSTOMARY when discussing critical reading to list "distinguishing fact from opinion" as one of the primary subskills involved in this evaluative process. Such a listing implies that there is a difference between facts and opinions and that this difference can be reliably detected. The purpose of this paper is to examine these two premises in order to determine what, if any, instructional guidelines for teaching this skill can be discovered.

Fact vs. Opinion

Dictionary definitions and common usage refer to facts as something having actual existence while an opinion is generally accepted to be a form of belief not quite as strong as positive knowledge. On the one hand, then, facts are existing bits of known and verifiable information while opinions, even though based on facts, transcend the absolute certainty of facts and incorporate varying degrees of speculation, confidence, and judgment. Most theories and generalizations are forms of opinions.

Facts can be generally divided into two categories, defined and empirical. Defined facts are those which have an absolute certainty of existence because we have created them by consensus. The statement "2 plus 2 equals 4" is an example. "Paris is the capital of France" is another. The truth of these statements can never be known through reasoning or research; they are true because of agreement and convention. Defined facts are most commonly found in mathematics, although they are used in many academic disciplines. However, their significance in everyday life, particularly with regard to the type of behavior desired and obtainable through critical reading, is probably of minimal importance.

Empirical facts are those which have been discovered, generally as a result of inquiry and systematic investigation. Statements such as "Mars orbits the sun" and "pi equals 3.14 +" are examples of this category. (An analysis of these statements reveals that they implicitly contain certain elements found also in defined facts. This merely points out that these categories are not

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mutually exclusive.) Sentences such as "Nebraska is north of Kansas" probably also belong in this category, although it is possible to argue this point if one wishes to split hairs. Empirical facts probably play a more significant role in everyday life than do defined facts, but close examination leads us to conclude that both are of minor importance in day-to-day existence.

This is because of the present state of man's knowledge. Most facts are tidbits, isolated and discrete pieces of information. Few generalizations valuable to the man-in-the-street are a result of a compilation of indisputable evidence. Few if any decisions about occupation, purchasing, leisure time, religion, politics, etc. can be made solely on the basis of facts or generalizations derived from facts. When facts are used for a significant purpose they are most frequently used in the context of an underlying belief or assumption rather than as a foundation in and of themselves. This situation seems to negate some of the value often attributed to facts.

By the very existence of this subskill and by believing that readers should be able to differentiate between facts and opinions, it is possible to conclude that we believe facts are "better" than opinions. If this interpretation is correct, it may indicate that we do not have an accurate perception of the relative significance of facts and opinions. By implicitly accepting this subskill, we may be overvaluing the role of facts in everyday life.

Another weakness of facts is that they may produce a distorted view of reality. Beginning with Hume, a long succession of philosophers has persuasively argued that there is no infallible method for ascertaining matters of fact. That is, even information revealed through empirical approaches is not necessarily incontrovertible and should not be thought to be absolutely unequivocally true irrespective of time, place, person, and circumstance. This point of view pervades twentieth-century science and is so powerful that even some theologians are using it as an integral part of their ethical system.[1]

For critical reading there seem to be two points. First, the distinction between fact and opinion is blurred, their differences are less obvious, and reliable detection is confounded. To get a sound yet workable definition of each may require an analytical philosopher of epistomological bent to do for them what Scheffler has done for the terms "know" and "believe."[2] Until then we may be best off by being less assertive and certain that there are clear-cut differences.

Second, if, as a prelude to distinguishing between fact and opinion, we define "fact" so that we create the impression that some things are certain, absolute, and infallible, we are defeating some of the general primary objectives of critical reading in order to attain a specific secondary one. Critical reading, by definition, postulates a fallible world, and anyone trying to teach critical reading of expository material implicitly accepts this model. We should not chip away at this model nor weaken its foundations by unwittingly using inconsistent definitions or creating contradictory attitudes.

Another major difference between facts and opinions other than their respective definitions is the language in which they are or can be expressed. Facts are stated as unqualified assertions. It makes little sense in ordinary usage to state, "It *seems* to require a speed of 17,500 m.p.h. to escape earth's gravitational pull." Since we know this, we flatly state, "It requires . . ." and omit the qualifying word "seems." We are more precise in using language, and it makes infinitely more sense if, in expressing an opinion, we label it as an opinion in either of two ways:

Qualifiers—seems, appears, probably, may, etc.
Indicators—I think, we believe, our conclusion, etc.

A major problem, however, is that authors commonly omit qualifiers and indicators when expressing an opinion so that it then resembles a fact and detection is made difficult. And this leads us to the second part of the analysis.

Distinguishing Between Fact and Opinion

There are at least three reasons why it is frequently difficult to distinguish between a fact and an opinion.

1. *Use of similar linguistic structure and content.* Because they tell something about the observable world, facts are expressed in terms of what philosophers call "statement," but most of us refer to as "declaratory sentences": e.g., "Cars have wheels" and "The window is open." Many statements, because they refer to the existence of something, use forms of the verbs "be" and "have" which are defined as referring to that which exists or has reality.

Authors often use statements containing "be" or "have" verbs or imperative verbs when expressing opinions: e.g., "That was a superb movie" and "He will be a poor chairman." There are few outward clues to indicate that "Schools have teachers" is objectively verifiable while "Johnny can't read" is probably a subjective conclusion. Therefore, we cannot depend upon language structure to provide reliable clues to help distinguish between facts and opinions; we cannot say that facts take one linguistic form while opinions take another.

But if form isn't a dependable clue, what about content? Don't opinions often contain evaluative terms such as uglier, braver, poorer, easier, more powerful? Even though the answer is yes, we must not make a blanket conclusion that statements containing such modifiers are opinions. There are verifiable and unverifiable modifiers: e.g., "That is a taller building" *vs.* "That is a prettier picture." But to complicate the situation there are modifiers which are difficult to classify as to verifiability. "Larger" and "easier" are examples of modifiers which may be either verifiable or unverifiable depending upon the criteria upon which they are based.

A justifiable conclusion seems to be that each sentence must be examined individually and the criteria for any modifiers determined before we can state whether it is fact or opinion. We cannot rely on any generalization about the structure or the content of the statement to be of significant value in helping us make this decision.

2. *Use of levels of abstraction.* One function of language is to summarize a mass of details and to express this general idea in a capsule form. Human beings have found it suits them to say "The Mexican people like Americans" rather than to say "In a survey, 30 million Mexicans answered yes to the question, Do you like Americans?"

This kind of shorthand expression is extremely common in mass media. We are confronted with the situation where, because a newspaper cannot print the governor's total speech, it is summarized. And in this summarization, rather than stating explicitly that the governor referred five times to high taxes, an impressionistic sentence is used, "The governor referred repeatedly to high taxes."

We are not concerned here with the propriety or impropriety of this use of language. What is important is that our common use of abstractions confounds the problem of determining whether a sentence is a fact or an opinion. Most of us would think it acceptable to say of a child, "He gets good grades" when he has five A's and three B's on his report card. But is this statement fact or opinion? One thing is clear. Such a statement is at a higher level of abstraction than the data on which it is based, and the result is to make difficult an exact delineation between fact and opinion.

3. *Use of combined statements.* So far we have talked as if facts were facts and opinions were opinions and never the twain shall meet. But this is far from accurate. Consider the sentence "There's a mangy cur on the porch." Here is an opinionated factual statement. The fact is, if you trust the speaker, there is a dog on the porch; the opinion is that he's a mangy cur. The problem then becomes not simply distinguishing between two statements but of separating fact and opinion when expressed together—a considerably more difficult task.

Conclusion

The point of this analysis has been to make a partial examination of a commonly listed subskill of critical reading to help determine whether we *can* tell facts from opinions and whether we *should* tell facts from opinions. It has been shown that even though there are differences between the two—that is, we can differentiate between them—it is far from a simple task to do so. There are no handy rules-of-thumb we can give students to help them in this task. Furthermore, the complexity of the task is increased by combined statements which require the ability to detect bias before finally distinguishing fact from opinion. So there may be certain prerequisities necessary before attempting to teach this skill.

The question of *should* we teach this skill is at least as thorny a problem. The mere ability to distinguish between fact and opinion may not be as valuable as we have assumed. After we have separated the two—if indeed we can—it may be more important to determine the relevance, the soundness, or the implications of the opinion than to conclude, "This is a fact; that is an opinion." Being an opinion does not *per se* determine whether it is good or bad, right or wrong. The evidence and values on which it is based and the things it leads to are much more important than whether it is an opinion. But these matters are obviously beyond the scope of this paper.

Finally, it is hoped that this analysis, even though it did not reach any definite conclusions about the two premises which were examined, will not be viewed only as an end in itself, but applicable to other skills. Hopefully, this examination shows both the need for and the technique to use in analyzing other statements we so glibly espouse. Critical reading should not be confined to the classroom—for either student or teacher.

Critical Reading in a Developmental Reading Course

ROBERT DENBERG and CHARLES JONES*

AN EXPERIMENTAL READING COURSE was given at the Randell School in Denver, Colorado, to seventh- and eighth-grade students and another at our classrooms in Boulder, Colorado, to test the following hypothesis: assuming that the structure of reading and the structure of thinking coincide, then improving and extending the structures of logical and critical thinking result directly in improving critical and integrative reading ability.

Methods of Evaluation

We were hampered in the reliable gauging of our results by the unfortunate fact that no suitable standardized test exists to measure improvement in critical reading ability; however, since we were not concerned with the improvement of existing methods of teaching critical reading, but merely with testing the workability or non-workability of a new approach, we could validly use the two-valued criterion "improvement–non-improvement" in our evaluations. The evaluations were made by ourselves during the third portion of the course and by instructors at Randell School who observed the changes in critical reading ability evidenced in their students' classroom performances.

Structure and Methods of the Course

Half the course work was devoted to instruction in study skills, speed reading, flexibility, classifying and organizing writing, etc., and the other half to critical or integrative reading approached through the following: 1) a study of the principles of correct thinking; 2) their application in a series of class discussions of issues of general interest, in which no attempt was made to arrive at specific conclusions; instead precision, objectivity, structured and organized thinking, analysis and examination were fostered; and finally, 3) application to a variety of reading materials.

The following principles of critical thinking were explicitly covered:

A. *Precision with word meanings.* Mathematics and the sciences demand this awareness and respect for accuracy; all literature in all fields depends on the impact of specific and carefully chosen words.

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In order to foster precision in word comprehension in our students, it was necessary first to drive home very solidly this concept: Even the most prosaic words do not merely symbolize their referent, but have a secondary valuation or coloration (1) intrinsically, e.g. "highly sensitive: squeamish," (2) contextually, e.g. "highly sensitive to insult: highly sensitive to beauty," and (3) inferentially, e.g. "artistic and highly sensitive: highly sensitive, almost paranoid." Although most of our students were easily made aware of the importance of word usage in persuasive writing, we were concerned that they discriminate its importance in expository writing because of the assumptions implicit in word choice. The most important question the students were asked to consider was, "Why was this word and no other chosen?"

Other concepts covered to develop precision in the use of words were ambiguity and semantic confusion. The discussions of ambiguity were enlivened by exploiting the humorous aspects of ambiguity (for example, "My dog has an enormous appetite. He is very fond of little boys."). The concept was easily grasped by all students.

Semantic confusion posed a problem. We were familiar with the tendency of younger children to perceive words as absolutes, and we had considered the possibility that the thinking of our 13- and 14-year-olds might not be sufficiently mature to grasp this concept. The old question, "If a tree falls in the forest and there is no one there to hear it, does it make a sound?" is immediately resolved when definitions are agreed upon. We were pleased that almost all our students were able to understand the nature of semantic confusion and could be led to analyze successfully questions like the one above.

B. *Structure of thought.* Thought—in books, or in speech—always has a structure, and the ability to find this structure is vital to understanding. The syllogism is an idea in a clearly structured form. The relationship of the parts to each other and to the whole is immediately evident: for example, "All men are mortal; Socrates is a man; Socrates is mortal." But all ideas contain this same relationship, however confused or obscure; and to analyze or understand anything, this structure must be implicitly or explicitly extracted. Our students examined various books, including their own textbooks, to find the structure and movement of the thought, so that each work was seen as a coherent, meaningful whole without "loose ends" or disconnected facts.

Sometimes thought is not properly structured: for instance, "All dogs are animals; all cats are animals; therefore, all dogs are cats." By analyzing various kinds of fallacies and understanding why they were fallacies, our students developed a "feeling" for the logical, for unity of thought and for coherence, which was manifested in their own thought as we observed it in the group discussions.

C. *Recognition of implicit assumptions.* Many writers present some of their ideas implicitly, and the reader must be able to "read between the lines" and draw inferences. Value judgments (Is a thing good or bad?) are often not stated formally. Sometimes the writer or speaker is not aware of their existence, yet they color and distort the objectivity of his thought. Feelings that masquerade as thoughts can be exposed, but first the reader must know that they can exist.

The group discussions included topics like "Should 18-year-olds be allowed to vote?" and "Should capital punishment be abolished?" All speakers were required to use words precisely, present their ideas in a structured way, be relevant at all times, be objective, support their beliefs, and recognize underlying assumptions and call opinions "opinions." Usually two or three different opinions emerged, and the class evaluated each in regard to the following criteria: What is the formal structure of each argument? What are the underlying assumptions? What fallacies, if any, exist? How well supported or factual is each argument? On the basis of what evidence do you agree or disagree? The rigor of these rules made communication between the students awkward for only a short time. The value, in terms of clarity and lack of confusion, as well as in superior development of thought, soon became apparent and welcome to the students.

Our course devoted a good deal of time to the application of these critical principles to reading. Obvious material that we used included newspaper editorials, articles in two different newspapers about the same event, advertising in magazines, book and movie reviews. But we believed that critical or integrative ability should be valuable to every kind of reading, and for this reason we worked with literature, especially poetry, with essays, and with all kinds of factual materials from the social studies and the sciences.

Observations

A. *Observations in the Reading Class.* The discussions gave students the opportunity to use the critical principles and gave us the opportunity to see how effectively they were being used. At first, we noticed the flow of ideas was rather disorganized in most of our students. In discussing the topic "Should prisons be used to punish or to rehabilitate?" we received many contributions like the following: "There was a man in my neighborhood who stole, and the police caught him and now he's in jail." Although perhaps colorful or interesting, anecdotes like this failed to make a point or shed any light on the problem at hand. We were receiving free associations, and students could not distinguish between relevancy and irrelevancy. Again, at the beginning, students would cite fathers, uncles, big sisters to prove their points. "My uncle says that if anyone sells dope to kids he should be punished by being put in jail for the rest of his life." Why the student's uncle believed this was not indicated; merely that he said it seemed sufficient proof. Also common at the beginning were emotional judgments. "It must be terrible to be in prison to be punished, so you shouldn't punish criminals, just rehabilitate them." Feelings are valid when they are recognized as such, but logical argument and discussion suffer when all that is exchanged is emotion.

We noticed that the students became far more critical as the class progressed. The three errors given above—irrelevancy, inadequate support of opinion, and subjectivity—decreased significantly. At first the teacher had to exert constant and forceful control over the course of the discussion; toward the end the students did this themselves in evaluating their own contributions and those of their fellow students.

We noticed a less tangible improvement in the students' choices of words. "Bad," "good," "right," "wrong" gave way to more objective and less colored words. And in students' evaluations of books and essays we noticed the same development of critical ability.

In student analysis of writing for content and organization we also found considerable improvement. Initially, when the students were asked to indicate the structure of a flow of ideas, they stayed on the factual level. "The X tribe and the Y tribe live in similar climates." "They have the same resources." "The author says one tribe is monogamous, the other isn't." "It says one tribe lives off the land, the other robs from neighboring villages." The reason for these facts, to show that environment does not completely determine the way a people lives, that culture is as important as environment, and can, in fact, change it, was not considered as part of the structure. Through the course, the students were increasingly able to see why facts are presented, that they are not isolated units which just happen to be in the same essay or chapter or book, but that they are all connected and are used to support general ideas, even if these general ideas are implied and not bluntly stated.

A great deal of interest and participation was generated in the group discussions, and we were pleased to notice that the shyer students became less reticent as the course progressed and offered many contributions.

B. *Observations in other classes.* The most surprising observation (although perhaps it shouldn't have been) was that the students became more fluent and coherent in their own writing. Improvement in comprehension was reported, and some students became much more expressive, although this may have been a temporary carry-over and not a permanent change. One student jokingly said, "This course bothers me, because when I leave it my friends and I keep getting into long arguments about what we were talking about in class."

Conclusions

In all cases improvement in critical reading ability and in critical thinking was noted by ourselves and by the instructors at Randell School. Instructors also found improvement in writing and speaking ability in some students. As was expected, critical reading ability carried over into the academic classroom situation was somewhat less than that evidenced during the reading course, but nevertheless was believed to be significant. We also believe that reading improvement of this nature may be expected to generate continued improvement in the student, such improvement being an attitude of posture of mind [illegible] well as a proficiency.

SIGNIFICANT RELATED ARTICLES

The articles here do not exactly fit under any of the categories represented by the preceding sections of this reprint. However, all the articles have relationship to the teaching of comprehension skills, even though somewhat obliquely in some instances.

The opening article affords a highly selective but inclusive listing of comprehension skills at the elementary school level. Other articles relate to the critical thinking which operates in all critical reading. The effects of linguistics is dealt with, not only for reading but spelling and speech. The problems of culturally disadvantaged children are also dealt with.

The reader will find valuable supplementary articles listed in the bibliography at the end of this volume.

Evaluating Critical Reading

Martha L. King*

DEVELOPING A NATION of critical readers appears to be an educational aim more lauded than comprehended, more sought-after than accomplished. For despite the improvement in general literacy statistics of the nations, teachers and other thoughtful citizens are showing increasing alarm over the inability of Americans to read critically. Much has been written about the probable causes of this special reading deficiency. Vague and ambiguous concepts of the nature of critical reading, inadequate definition of the specific skills involved, insufficient instructional materials and techniques, and the limited abilities of teachers to instruct pupils in these higher level reading skills are commonly identified as inhibiting factors. A fifth deterrant has undoubtedly been the lack of procedures and instruments to use in evaluating the achievement of pupils in this area.

Teachers tend to teach best those subjects and skills that are regularly and directly evaluated in the schools' organized testing programs. In reading this means, then, that word recognition skills, literal comprehension skills, knowledge of vocabulary, and some interpretation and study skills are the facets of reading best taught because these are the skills that are covered in the standardized tests most frequently used in elementary schools. Only rarely do such tests include items that require pupils to identify the author's opinion, detect hidden meanings, interpret figurative language or tone, or make generalizations from the facts given. Items which require the examinee to identify omission of important facts, irrelevant data, discrepancies in information, inappropriate analogies, and persuasive use of words are completely missing from elementary school reading tests. Yet, through newspapers, magazines, and television, youngsters daily confront reading materials in which such reading skills are needed.

It is the purpose of this paper to describe two types of evaluation instruments that were developed at Ohio State University as a necessary part of a research study of the feasibility of teaching critical reading at the elementary school level. When the researchers began designing procedures for teaching critical reading skills to pupils in grades one through six, it soon became apparent that new instruments for measuring effectiveness of instruction were needed. Recognizing that critical reading is a complex dynamic process involving various types of thinking, two very different kinds of evaluation instruments were devised. One was a battery of three tests, which were constructed for grades one through six, to measure the growth in achievement of the identified critical reading skills. The second technique was developed to measure the quality and kind of thinking that ocurred when children were engaged in critical reading and discussion activities in the classroom. This second instrument also enabled the teacher to assess to a limited degree the effectiveness of her verbal behavior in stimulating the critical reading-thinking habits of her pupils.

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*_Forging Ahead in Reading, IRA Proceedings, 12,_ (1967), 179-185.

Developing a test of critical reading

Developing a test of critical reading skills for elementary school pupils was an arduous task because the skills of critical reading had not been identified and precisely clarified. Moreover, finding reading matter or writing new materials that would test critical reading ability and still be within the readability competence of the examinees was extremely difficult. The first step in test construction was that of clarifying that aspect of reading ability commonly referred to as critical reading. What knowledge and skills were essential for the critical reader? From a search of the literature a long list of reading skills, thought to be basic to critical reading, was compiled. This list was sent for validation to a panel of reading experts across the nation. They were asked to critically analyze the list, to rate the importance of each skill, to suggest other skills that should be added, and to indicate those that should be omitted. The revised group of critical reading skills was further validated by classroom observations of critical reading lessons, in which the completeness of the list of skills was checked. Despite the care that was used in developing the list of skills, duplication and overlapping were evident in the resulting list. Some skills, moreover, were very similar; others were quite distinct. To assure both balance and preciseness in the definition, the skills were categorized into three major groups. All of the items that concerned the validity (reasonableness) and reliability (trustworthiness) of reading materials were classified as *logic* skills. Included were drawing conclusions from stated premises, identifying unstated premises, identifying fallacies in reasoning, and recognizing persuasive devices in writing. The language skills were classified either under logic or the second major classification, *literary analysis* skills. Skills that involved recognizing and judging persuasive use of words, vague and imprecise words, and the multiple meanings conveyed by a single word were included with the logic skills. The literary analysis category contained such language-related skills as interpreting and evaluating metaphor, symbolism, personification, alliteration, and authentic speech. Other skills included under literary analysis were related to identification, analysis, and evaluation of 1) forms of writing; 2) the components of literature such as characterization, plot structure, setting, and theme; and 3) the literary devices that make up the author's style.

Those skills that involved going beyond a single piece of writing and comparing or evaluating it according to external factors were designated *general skills*. This group consisted of such abilities as identifying, comparing, and evaluating sources; judging the author's viewpoint and competence; determining the publisher's (or sponsor's) commitments; and comparing multiple sources in order to verify information.

Constructing test items

Critical reading *ability* results from the readers not only knowing about and identifying such features of writing as logical fallacies, literary form, or the point-of-view of the author but also from their skill in analyzing, comparing, and judging various aspects of the written material. Constructing a useful evaluation instrument, then, called for devising test items that required the reader not only *to recognize* faulty reasoning, discrepant information, and elements of the author's style but also *to judge* the trustworthiness, truthfulness, and quality of materials. An example of a question which requires the reader *to recognize* and judge a statement—in this case a false analogy—is the following:

> A boy is like a tree. He must stand straight and tall.
>
> What is wrong with these sentences?
> 1. Trees are always straight, but boys are not.
> 2. Trees are always straighter than boys.
> 3. Boys are not as tall as trees.
> 4. Boys are not like trees in most ways.

The next question expects the reader to *analyze* statements and *apply* knowledge to reach a valid conclusion from a series of statements:

> Anyone who is on a TV show is rich.
> Captain Kangaroo is on a TV show.
>
> If the above statements are true, what else must be true?
> 1. Captain Kangaroo is rich.
> 2. People who are not on a TV show are poor.
> 3. Captain Kangaroo may be rich.
> 4. Anyone on a TV show may be rich.

In the example that follows the children are expected to make a *judgment* about the kind of question Bill's mother asked:

> John told his mother about his new friend, Bill. His mother said, "Is your friend a good boy or a bad boy?"
>
> What is wrong with this question?
> 1. Bill may be good one time and not so good at another time.
> 2. Bill might be better than John.
> 3. John's mother knew Bill was a good boy.
> 4. Bill was John's friend, so he was good.

Other questions in the test asked the examinee to compare two sources for likenesses and differences in content, form, author's purpose, and facts provided. The following illustrations from the primary form of the test show that students also were expected to go beyond the text provided in making judgments about the material.

> LET'S READ ABOUT SEA SHELLS
>
> What are sea shells? Sea shells are the hard coverings of many kinds of sea animals that belong to the mollusk family. Mollusks are animals with soft bodies. They are animals without backbones. The shell is the house that the mollusk lives in. There are many things that you can learn by looking at sea shells. One sea animal, the nautilus, grows a new room each time he gets bigger. When he adds a new room, he closes up the old one. Some shells have 30 rooms in them.
>
> HOUSES FROM THE SEA
>
> My sister and I walked along the beach with our empty pails. The ocean waves rolled in and out. The waves surprised us by leaving many shells lying on the wet sand. Many of the shells reminded us of butterflies, angel wings, Chinese hats, staircases, fans, tops, castles, and boats. We filled our pails with all kinds of shells. We found one large beautiful shell. When we held it up to our ears, we could hear the sound of the ocean. We want our friends to see our shells. We will tell you the funny names we made up.
>
> Pretend you want to share a shell collection with your class. Which story would you read to find out more about sea shells?
> 1. The first story because it tells more about the sea shells.
> 2. The second story because there are funny names we can use.
> 3. The first story because mollusks are funny animals.
> 4. The second story because it talks about the ocean waves.
>
> In what way do you think the two stories are different?
> 1. One is about a girl and a boy, and one is about backbones.
> 2. One is about a family, and one is about a house.

3. One has information about sea shells, and one is a story about collecting shells.
4. One has facts about angel wings, butterflies, Chinese hats, fans, and castles; and the other story has facts about houses.

What should the person who wrote the *first story* have done?

1. Gone deep sea fishing.
2. Studied about sea animals.
3. Studied about the nautilus.
4. Made a collection of sea shells.

Due to the practical necessity of constructing a testing instrument that could be administered to elementary school pupils within reasonable time limits, only a sampling of the extensive list of critical reading abilities could be included. Selection of items for the initial forms of the tests was based upon criteria of appropriateness for the grade levels tested and the uniqueness of the skill. For example, if two abilities were judged to be very similar, such as recognizing the propaganda devices of namecalling and plain folk technique, only one item was included. Parallel items were written for each of the skills selected for both primary and intermediate grades. These were then organized into four trial forms of the test—two for pupils in grades one through three, and two for pupils in grades four through six. The tests were then administered to a population of 3,017 pupils in ten elementary schools in a four-state area. Results of this administration furnished data for both item analysis and coefficients of reliability of the two forms at each grade level. Following the item analysis, final forms of the primary test and intermediate test were constructed on the basis of two additional criteria: the discriminating power and the difficulty of the test items. The reliability of coefficients for the two trial forms ranged from .72 to .86 for the different grade levels. Although these were not exceptionally high, they were considered adequate for the purpose of this test, which was to assess growth of pupils in specific skills.

Norming the final forms

Three forms of the Critical Reading Test were finally constructed. There were two primary forms, which differed primarily in the readability of the items, and one intermediate form. Both of the primary forms contained 10 questions pertaining to "general" skills category; 17 questions in the *logic* classification, which included propaganda devices and semantics questions; and 15 in the *literary analysis* category, which included literary form, plot structure, theme, characterization, and literary devices. The intermediate test was longer than the primary and was divided as follows: 15 items tested the general skills of comparing sources, determining author's competence and purpose, and selecting relevant sources; 21 questions were focused on logic skills; and 18 items pertained to literary analysis. The revised tests were administered to a second national sample for purposes of norming. Forty-six school systems in eight states in four geographical regions provided norming data from 3,527 pupils. Detailed data pertaining to grade level norms, coefficients of reliability of the final forms, and factor analysis are not given here but are available in a paper written by Bernice Ellinger (*2*).

How adequate is the test?

Comparison of the mean scores across grade levels shows that the level 2 primary test was very difficult for grade two in both spring and fall administrations and that the intermediate test was difficult for fourth graders in the fall testing, especially. Further investigation will show whether the forms of the test should be further revised for readability or moved up one grade level each.

The main criterion for judging the adequacy of a test is the degree to which it measures what it professes to measure. The skills that are included in the Ohio State Critical Reading Test were submitted to a group of recognized reading authorities for validation before items were written. In other words, the skills included in the test were judged by these authorities to be essential to critical reading. How successful the item writers were in devising questions that actually test the skills identified is yet to be determined. Factor analysis of the test, which is still in progress, will provide better data regarding the internal validity of the instruments.

Ralph Tyler has said that evaluation of learning should be considered a dynamic process that continues to change according to changing educational concepts, conditions, and purposes of evaluation. The developers of this test of critical reading view it as an embryonic effort that will change and improve as it continues to be used, researched, and revised.

Classroom observations as an evaluative technique

Paper and pencil tests provide one kind of evaluation data about pupils—that is, an indication of their level of accomplishment in selected skills or learning tasks at a given time. Such instruments do not provide appraisal data about the learning conditions that foster a specific type of behavior, nor do they furnish information about the thinking processes that pupils use as they are engaged in such cognitive tasks as critical reading. Inasmuch as critical reading is a thinking act in response to written communication, it is highly important that teachers have tools for analyzing and evaluating children's thinking processes as revealed, not only by written responses, but by verbal responses, also. Research in the areas of teacher behavior and children's thinking has emphasized the importance of the teacher's language in fostering intellectual growth in children. From her studies of teaching strategies and the development of cognitive processes, Taba concluded that a teacher's questions play a crucial role in the development of pupil's thinking skills because her questions circumscribe the mental operations which pupils can perform and determine which modes of thought they learn (*3*).

It follows reasonably, then, that evaluation procedures, designed to give the teacher feedback about the kind and quality of thinking that was observable in the verbal interaction between herself and the students, should provide clues to ways of improving the instructional process. Such evaluation techniques should not only reveal the pupil's growth but should furnish data about the effectiveness of the teacher's language.

The second type of evaluation instrument that was developed and used in the Ohio State University Research Study of Children's Critical Reading was an observation scale. This tool enabled the researchers to analyze the relationship between the teacher's verbalizations and the pupils' responses and to assess the changes (or improvements) in both teacher and pupil utterances that occured during the eight months of study. To fulfill the purposes of the research study an observation instrument, which would permit the classification of both qualitative and quantitative verbal behaviors, was devised. The scale consisted of two related category systems: one for recording the teachers' utterances and the other for noting the pupils' responses. The eight categories for classifying the teachers' talk show some influence of Bloom's *Taxonomy* (*1*); the definiitons of the terms, however, have been altered and limited as is shown in the following definitions:

Specific facts: All talk that is intended to bring specific information to the learners.

Clarifying: Statements or questions

used to refine previously discussed ideas or those misinterpreted by individuals; included are definitions, illustrations, rephrasing, or emphasis on a prior point.

Interpreting or Inferring: Providing meanings that go beyond the literal ones given in the written material. Included are the personal meanings which the reader associates with the text and his interpretation of the author's hidden meanings.

Analyzing: The statements or questions that require an identification and examination of component parts of a piece of writing, a situation, or a phrase; the nature of the relationship of the parts; and the internal consistency of the whole piece.

Applying: The statements or questions that require a direct application of information or criteria to another situation or piece of information.

Summarizing: A synthesis of preceding information and ideas, often showing relationships between parts, is the object of such questions and statements.

Evaluation: Statements or questions in which a judgment based upon criteria is made or expected. Both personal values and public criteria are bases for making judgments.

The main criterion for determining the five pupil categories was the differentiation of levels of thinking that were observable in their responses. Here the mental operations as identified by Guilford in the structure of the intellect proved useful in defining the separate types of thinking. The five different types of thinking—cognition, memory, convergent and divergent production, and evaluation—were arranged in a continuum horizontally across the top of the observation scale. *Cognition and memory,* which were grouped together and defined as literally understanding and relating what had been read or previously stated, were classified as level 2; *convergent responses,* those that indicated interpretation, illustrations, or reorganization of the content, were designated as level 3; *divergent responses,* those that revealed theorizing, hypothesizing, or making new and unique applications information and ideas, were classified at level 4. Level 5 was reserved for responses that showed that pupils had made an *evaluative judgment* based upon personal or public criteria. Responses were classified at level 1 when there was evidence of guessing or random thoughts. Both level 3 and 4 responses were considered essential prerequisites to critical reading, but level 5 responses were judged to be the most desirable because of the evaluative nature of critical reading.

During the experimental year of the critical reading research study, 24 classroom teachers, four at each of the first six grade levels, were regularly observed while teaching reading. One half of the teachers (the experimental group) were given special materials and instruction in critical reading while the remaining twelve (the control group) had no special instruction in critical reading but were provided an equal amount of instruction and materials in selected areas of children's literature.

The purpose of the observations was to collect data pertaining to the similarities and differences in the verbal behavior of both teachers and pupils in the two groups and to ascertain what kinds of changes, if any, occurred during the time of the study. Each teacher was observed six times, providing a total of 144 observations for analysis. Two trained observers at each session made on-the-spot categorization of the teachers' statements or questions and the pupils' responses. Teachers' statements and questions were classified according to the seven types designated above. Pupils' responses were recorded in the same horizontal rows as the preceding statement or question made by the teacher; the responses, however, were classified within the rows according to the level of thinking exhibited. The observation instrument provided a graphic representation of the type of utterances the teacher made, the quality of responses given by the pupils, and the reciprocal relationship between the two.

The analysis of the 144 observations produced some interesting and encouraging data, which have implications for the evaluation of critical reading. First of all, the study revealed that both groups of teachers improved their questioning behavior. They decreased their use of specific fact questions and increased their use of more thought-stimulating questions. Experimental teachers changed in the direction of asking more interpreting, analyzing, and evaluating questions; control teachers moved toward asking more applying questions. Apparently, knowing how to ask different kinds of questions for various purposes leads to greater improvement than do intuition or desire. The control teachers wanted to teach increasingly better lessons and did improve; the experimental teachers who had some training in the art of asking questions asked significantly more questions, however, that demanded analytical and evaluative responses.

The findings further revealed a significant relationship between the teachers' questions and the intellectual effort exhibited in the pupils' responses. Those teachers who asked more interpreting, analyzing, and evaluating questions elicited from their pupils higher levels of thinking which could be classified as inferring, illustrating, hypothesizing, theorizing, and evaluating. Improvement in pupils' ability to engage in higher levels of thinking was noted during the time of the study, also. The experimental pupils, especially, were observed to give significantly more responses at the highest evaluative level. It appears that pupils may become increasingly aware of the goals of reading instruction through the questions the teacher asks; and that when they clearly understand the expectation to think more deeply or in a variety of ways, they are motivated to meet the expectation.

The observation procedures just described involved several outside observers because they were used to collect research data; the techniques, however, are adaptable to regular classroom situations. By recording reading instructional sessions on audio or video tape, the individual teacher can replay, listen to the recordings, and analyze the verbal exchange between herself and the children. If she samples instructional sessions regularly over a period of time, the teacher will be able to evaluate changes in her language and that of the children. One first grade teacher who regularly sampled the discussion in one reading group for a period of two months observed that when she asked better questions, the children responded with more independent and thoughtful contributions. She noted further that the parroting of answers, which was common among the first graders, decreased; children who seldom spoke at the beginning of the observations made worthwhile contributions after six weeks; children increased the length and number of sentences used; and pupils moved in the direction of responding to one another rather than to the teacher. Also, growth of individual pupils in analyzing, comparing, and evaluating reading materials was revealed through the comparison of recordings. After listening to more than a dozen tapes, this teacher concluded that the pupils became more highly motivated and interested in reading when they were challenged to interpret, apply, and evaluate and that success in these thinking processes brought the children more satisfaction and confidence in their reading.

Experimentations with two procedures in the evaluation of critical reading have been described. Although different, both of the two devices will provide the teacher with feedback essential to the improvement of the teaching learning environment. Together, the two instruments measure both knowledge and process objectives of critical reading.

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A Definition of Critical Thinking

ROBERT H. ENNIS*

AS A ROOT notion, critical thinking is here taken to mean the correct assessing of statements. This basic notion was suggested by B. Othanel Smith (*3*): "Now if we set about to find out what . . . [a] statement means and to determine whether to accept or reject it, we would be engaged in thinking which, for lack of a better term, we shall call critical thinking." Since Smith's definition does not use any words like "correct," his notion is slightly different. Smith's concept of critical thinking, however, permits us to speak of "good critical thinking" and "poor critical thinking" without redundance or contradiction. Though this is an accepted manner of speaking, the predominant manner of speaking presumably builds the notion of correct thinking into the notion of critical thinking. Though the latter interpretation is used in this paper, it would be easy to restructure what follows and use Smith's concept. "Good critical thinking" in Smith's sense means the same as "critical thinking" as used in this paper.

Since there are various kinds of statements, various relations between statements and their grounds, and various stages in the process of assessment, we can expect that there will be various ways of going wrong when one attempts to think critically. In view of this fact, the aspects of critical thinking about to be presented, which may be looked upon as specific ways to avoid the pitfalls in assessment, are bound to make a rather heterogeneous list.

This list and the accompanying criteria for judging statements are based in a large part upon a study of the literature in education, philosophy, and psychology.* The list of critical thinking aspects is also based upon an analysis of a number of specimens of alleged justifications of statements, and a consequent realization of the places where these justifications can go wrong. One may look upon this list as a statement of a number of items that, if taught to students, will result in a greater likelihood that they will be critical thinkers. Further refinement of this list is a continuing task, and of course much remains to be done.

Major Aspects of Critical Thinking

A critical thinker is characterized by proficiency in judging whether:

1. A statement follows from the premises.

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*References that were of help can be found in Robert H. Ennis, "A Concept of Critical Thinking," *Harvard Educational Review*, 32 (Winter, 1962), 81-111; the present article is a streamlined version of that article. The theoretical analysis of critical thinking and the proposals for needed research in that article also have been omitted here. The latter feature is expanded in an article entitled "Needed: Research in Critical Thinking," *Educational Leadership*, October, 1963.

The Reading Teacher, 17, (May 1964), 500-612.

2. Something is an assumption.
3. An observation statement is reliable.
4. A simple generalization is warranted.
5. A hypothesis is warranted.
6. A theory is warranted.
7. An argument depends on an ambiguity.
8. A statement is overvague or overspecific.
9. An alleged authority is reliable.

Although the root notion calls for its inclusion, the judging of value statements is deliberately excluded from the above list. This exclusion admittedly weakens the attractiveness of the list, but makes the job more manageable. So long as we remember that this exclusion has occurred, we should not be confused by the truncated concept. Perhaps this gap can at some future time be at least partially filled.

The exclusion of other important kinds of thinking (creative thinking, for example) from this basic concept of critical thinking does not imply that the others are unimportant, nor does it imply that they are separable from it in practice. This exclusion is simply the result of an attempt to focus attention on one important kind of thinking.

Another aspect which has deliberately been excluded from the list is proficiency in judging whether a problem has been identified. This is excluded not because it is unimportant, but because it resolves into one or another of the items on the list (or the judging of value statements) in each of the various meanings of "identifying a problem." This point will be developed later.

Each of the listed aspects of critical thinking will be examined and, if possible, criteria will be presented, clarified, and, when it seems necessary, at least partially justified.

1. Judging Whether a Statement Follows from the Premises

The concern of most logic books is with whether a statement follows *necessarily* from the premises. This is the judging of deduction. Reasoning in mathematics, "if-then" reasoning, and syllogistic reasoning all exemplify deduction.

The basic criterion is this: "A conclusion follows necessarily if its denial contradicts the assertion of the premises." Various rules have been developed for different types of deduction, but all see to it that this requirement is fulfilled. Well-developed sets of rules include:

1.1 The rules for handling equations and inequalities.
1.2 The rules of "if-then" reasoning:
    1.21 Denial of the "then-part" requires denial of the "if-part," but not necessarily vice versa.
    1.22 Acceptance of the "if-part" requires acceptance of the "then-part," but not necessarily vice versa.
    1.23 Instances of an "if-then" statement are implied by the "if-then" statement.
1.3 The rules for categorical reasoning. These rules may be summarized by the following: "Whatever is a member of a general class is also a member of whatever that general class is included in, and is not a member of whatever the general class is excluded from."

A number of cases of reasoning are parallel to strict deduction, but are different in that the generalizations in use as premises do not hold universally under any conceivable circumstance; they have exceptions and limits, not all of which can be specified. To extend Waisman's term

(5), they are "open-textured." Reasoning from principles and hypotheses to the world of things, men, and events is inevitably of this sort. Sometimes the exceptions and limits are so far removed that we do not have to worry about them, and in such cases we can proceed as in deduction without fear of going wrong. Sometimes the limits and exceptions are close by, in which case, still approximating the deductive model, we use words like "probable," "likely," "barring unforeseen circumstances," etc., in the conclusion.

For an example of the latter case, consider the application of that standard law of economics, "If the supply is constant and the demand for a product decreases, the price will decrease." Two of the limits of the application of this law are within the knowledge of all of us. It is intended to apply to an economy free of government control and to a sector of it that is free of monopolistic control. Mention of these limits will suffice for present purposes, although there are others.

Now let us apply this law to a situation in which there is a decrease in demand for microscopes. Applying the law deductively, we are unalterably committed to a prediction of a price decrease. But it is not wise to be unalterably committed to such a prediction. For one thing, the well-known limits of the law might be breached: the government might decide to maintain the price of microscopes and pay for the destruction of the extras; or a monopoly might be formed to maintain the price.

But secondly, other things that are not yet explicitly built into the limits might go wrong. The makers of microscopes might form a trade association and decide incorrectly that with good advertising they *can* create a demand much greater than ever before, so that they can afford to raise prices. They therefore raise prices in anticipation of a nonexistent demand.

It is because of considerations like these that qualifiers like "probable" must be included in the application of many principles. The application of that law in that situation might be, "It is probable that there will be a lowering of price." But the application would not be this at all if it can be seen that a known limit is breached or that there is some other extenuating circumstance. The point is that the application of such principles should often not be stated any more strongly than this, even though the steps in reasoning parallel those of deduction.

Thus there are two kinds of following: strict necessity and loose following. The critical thinker can do both.

2. Judging Whether Something Is an Assumption

This topic is complicated because there are various logically-different abilities that go under this title. These can be best approached through an examination of various uses of the word "assumption": the deprecatory use, the concluding use, the premise use, and the presupposition use.

2.1 *The deprecatory use and the concluding use.* The deprecatory use implies the charge that there is little or no evidence to support a given belief and that the belief is questionable. Here is an example: "You're just assuming that Frank didn't read the assignment." This deprecatory use is often found to be incorporated in the other uses, but sometimes it stands alone. As such its appearance is tantamount to a judgment that the view should perhaps be rejected, or at least be held in abeyance because of lack of support. No further discussion of the evaluation of this kind of assumption-claim is necessary here, since this is a general charge and is covered under discussion of the various other abilities.

In the concluding use, the term "assumption" is used to mark a conclusion, but the deprecatory use is involved too, since the conclusion is implied not to be fully established. Here is an example: "My assumption is that Hissarlik is at the site of Troy" (a statement made at the completion of a presentation of the evidence bearing on the location of Troy). We need not be concerned with discussing whether something is an assumption in the concluding sense; the important question is whether such an assumption is justified and that question is covered elsewhere in this paper.

The first two uses of "assumption" were specified in order to keep them out of the discussion of the next two; the following discussion does not apply to them.

2.2 *The premise use.* This kind of assumption stands anterior to a conclusion in a line of reasoning, whether the conclusion be inductive or deductive. To call something an assumption is to say that the conclusion depends upon it, and that if the conclusion is to be accepted, the alleged assumption should also be accepted. Thus the location of assumptions (in this sense) is a useful step in the evaluation of conclusions.

Here are criteria for premise-type assumptions:

2.21 Of the various possible gap-fillers, the alleged assumption should come closest to making the completed argument, proof, or explanation, a satisfactory one. (This criterion is necessary and sufficient.)
  2.211 The simplest gap-filler is ordinarily the one to choose.
  2.212 If there is a more plausible gap-filler among the more complex ones, it should be chosen. Plausibility, however, requires fitting in with existing knowledge — not being a special case.
2.22 Other conditions remaining the same, the state of affairs that is predicted could not occur (or probably would not occur) if the alleged assumption were false. (This criterion applies only to alleged empirically-necessary assumptions, but for them it is necessary and sufficient.)
2.23 The community of experts in the field would not accept the position, conclusion, or argument without first believing the assumption to be true. (This criterion is neither necessary nor sufficient, but is a good ground.)

What is a gap-filler? Consider this piece of reasoning: "Since the demand for microscopes has decreased, the price may be expected to decrease." A gap-filler here would be:

1. When the demand for a commodity decreases, the price will decrease. (It fills a gap in reasoning from the decrease in demand for microscopes to a decrease in price.)

It is not the only way to fill the

gap, however. Consider these alternatives:

2. When the demand for goods and services decreases, the price decreases.
3. When the demand for optical instruments decreases, the price decreases.
4. When the demand for optical instruments (other than field glasses) decreases, the price decreases.

Since all four of these will fill the gap, it should be clear that being a gap-filler is not by itself a sufficient condition for being an assumption. The simplest gap-filler is ordinarily the one to attribute, thus ruling out No. 4. Simplicity might also be a ground for not accepting No. 2 as the assumption, since there is a conjunction of two things (goods and services) mentioned. But if the prevailing knowledge in economics admits no basis for distinguishing goods from services in the context of this principle, then simplicity is counterbalanced by the need to fit into existing knowledge. The first two gap-fillers would then be equally defensible (or indefensible) and either could be called the assumption.

Gap-filler No. 3 introduces a new twist, talking only about optical instruments. It is as simple as No. 1 but is not as general. Other things being equal, generality is to be preferred. A system of knowledge is better if it covers more cases. But if the more general gap-filler (1) should be false, and the less general one (3) true (or more likely to be true), the less general gap-filler is the one to choose.

Assumption-finding then is the locating of a gap-filler, the simpler the better, provided that it fits into and contributes to a system of knowledge. The assumption-finder should try to be generous to the person whose assumptions he is locating, generous in that he should try to find the best candidate for participation in a knowledge system. He should not accept a false gap-filler as the assumption until he has searched for one that fits into an acceptable body of knowledge. Put more simply in a way that covers most cases, he should search for one that is true.

While discussing gap-filling it would be well to note that there is one sometimes used criterion that is inapplicable: *logical* necessity. As exemplified by the four gap-fillers previously discussed, there is no single significant premise-type gap-filler which is logically necessary. It is always *logically* possible (though it may be extremely implausible) to complete an argument in more than one way, a point I have developed elsewhere (*2*).

Empirical necessity (2.22) is different. To the extent that empirical statements can be necessary, there can be empirically necessary assumptions. For example, a statement which predicts that the pressure in a fixed cylinder of confined air will increase is assuming that there will be a temperature increase. Since an increase in temperature in that situation *is* necessary for there to be an increase in pressure, the assumption is empirically necessary and can be pinned on the argument with confidence.

Criterion 2.23 mentions the experts. Although their considered opinions can be wrong, they do ordinarily know what fits into their body of knowledge. And they do know what is used successfully in the field to back up arguments and conclusions. So they can ordinarily be expected to know what an argument would need in order to be a good one.

2.3 *The presupposition use.* Presuppositions are sentences which must be true for a given statement even to make sense. This is the meaning of the term "presupposition" presented by P. F. Strawson (*4*). The claim, "The governor's mistakes have caused our present plight," presupposes that the governor has made mistakes. His not having done so would make nonsense out of either the affirmation or denial of the claim. If the governor has made no mistakes, it does not even make sense to say that his mistakes have caused our plight; nor does it make sense to say that his mistakes have not caused our plight.

Presupposition-finding is useful in avoiding being swayed by false presuppositions (if the governor has made no mistakes, we should be able to react to the presupposition that he has). And presupposition-finding is useful in grasping a verbal picture, and a part or the whole of a theory.

Judging whether something is presupposed by something else is simply a matter of stating the meaning of the "something else."

3. Judging Whether an Observation Statement Is Reliable

An observation statement is a specific description. Over the years, those fields most concerned with accuracy of observation have built up a set of rules for judging the reliability of observation statements. Here is a combined list of principles from the fields of law, history, and science:

- 3.1 Observation statements tend to be more reliable if the *observer:*
  - 3.11 Was unemotional, alert, and disinterested.
  - 3.12 Was skilled at observing the sort of thing observed.
  - 3.13 Had sensory equipment that was in good condition.
  - 3.14 Has a reputation for veracity.
  - 3.15 Used precise techniques.
  - 3.16 Had no preconception about the way the observation would turn out.
- 3.2 Observation statements tend to be more reliable if the *observation conditions:*
  - 3.21 Were such that the observer had good access.
  - 3.22 Provided a satisfactory medium of observation.
- 3.3 Observation statements tend to be more reliable to the extent that the *statement:*
  - 3.31 Is close to being a statement of direct observation.
  - 3.32 Is corroborated.
  - 3.33 Is corroboratable.
  - 3.34 Comes from a disinterested source with a reputation for veracity.
- 3.4 Observation statements, if based on a record, tend to be more reliable if the *record:*
  - 3.41 Was made at the time of observation.
  - 3.42 Was made by the person making the statement.
  - 3.43 Is believed by the person making the statement to be correct — either because he so believed at the time the record was made, or because he believes it was the record-maker's habit to make correct records.
- 3.5 Observation statements tend to be more reliable than inferences made from them.

4. Judging Whether a Simple Generalization Is Warranted

A simple generalization is a statement which covers a number of instances and holds that they share some trait. For example, that red-headed people tend to have hot tempers is a generalization. It holds that red-headed people share the trait of tending to have hot tempers. A generalization is warranted:

4.1 To the extent that there is a bulk of reliable instances of it. The greater the variability of the population, the greater the bulk needed.
4.2 To the extent that it fits into the larger structure of knowledge.
4.3 To the extent that the selecting of instances is unbiased.
  4.31 A pure random sample is unbiased.
  4.32 A systematic sample is unbiased if a careful investigation suggests that there is not a relevant cycle or trend followed by the sampling procedure.
  4.33 Stratification of a population on relevant variables and unbiased sampling within the strata, is likely to be more efficient than 8.131 or 8.132 alone.
  4.34 An unbiased sampling of clusters of the population and unbiased sampling (or complete enumeration) within the clusters is likely to be an efficient way of sampling when access to separate individual units is difficult.
4.4 To the extent that there are no counter-instances.

The generalization that red-headed people tend to have hot tempers would be warranted to the extent that there is a large number of reliable instances of red-heads with hot tempers, to the extent that we are able to account for red-heads being hot-tempered, to the extent that our instances of red-heads are picked without bias, and to the extent that there is a lack of reliable instances of red-heads with even tempers.

5. Judging Whether a Hypothesis Is Warranted

Though the word "hypothesis" is often used to refer to a simple generalization, for purposes of marking off an important kind of statement which has a different relationship to its grounds than a simple generalization I will restrict the word "hypothesis" to the job of referring to this other kind of statement. Under this usage a hypothesis is a statement which is fairly directly related to its support by virtue of its power to *explain* this support, rather than being related by virtue of the support's being composed of instances of the hypothesis, as is the case for simple generalizations.

The hypothesis can be either specific (as is the case in law and usually in history) or it can be general (as is ordinarily the case in physical sciences and the social sciences of economics, sociology, and psychology).

Here is an example of a specific hypothesis: "Hissarlik is located at the site of Troy."

Here is an example of a general hypothesis: "The pressure in a liquid varies directly as the depth, assuming the pressure at the surface to be zero."

A hypothesis is warranted to the extent that:

5.1 It explains a bulk and variety of reliable data. If a datum is explained, it can be deduced or loosely derived (in the fashion of the application of principles) from the hypothesis together with established facts or generalizations.
5.2 It is itself explained by a satisfactory system of knowledge.
5.3 It is not inconsistent with any evidence.
5.4 Its competitors are inconsistent with the evidence. This principle is the basis of controlled experiments.
5.5 It is testable. It must be, or have been, possible to make predictions from it.

For purposes of illustration let us consider the bearing of each of the criteria on each hypothesis of the above two examples of hypotheses:

Explaining a bulk and variety of reliable data (5.1). Since Hissarlik is only an hour's walk from the sea, the Hissarlik hypothesis explains the reported (in the *Iliad*) ability of the Greeks to go back and forth from Troy several times a day. It explains why there are ruins at Hissarlik. These explained reports, it should be noted, can be derived from the Hissarlik hypotheses together with established facts or generalizations:

Hissarlik is at the site of Troy.
Hissarlik is one hour's walk from the sea.
People are able to walk back and forth several times a day between places that are one hour's walk apart.
Therefore it is probable that the Greeks were able to go back and forth from Troy to the sea several times daily (the explained fact).

Hissarlik is at the site of Troy.
A large city when abandoned tends to leave ruins.
Therefore it is probable that there are ruins at Hissarlik (the explained fact).

Of course explaining only those two pieces of evidence is not enough to establish the hypothesis. More evidence of different types must be provided.

The pressure hypothesis explains why water spurts farther from a hole near the bottom of a tank than from a hole in the middle of a tank. It also explains the proportional relationships between the following sets of readings of pressure gauges attached to the supply tank in a water system:

Distance from Top of Tank (in ft.)	Pressure Reading (in lbs./sq. in.)
0	0
5	2.1
10	4.2

These data can be derived from the hypothesis together with established facts or generalizations:

The pressure varies directly as the depth.
The greater the pressure at a hole, the farther the liquid will spurt.
The bottom hole is at a greater depth than the middle hole.
Therefore, the water spurts farther from the hole near the bottom (the explained fact).

The pressure varies directly as the depth.
The depth at 10 ft. is twice that at 5 ft.
Therefore, the pressure at 10 ft. (4.2 lbs. sq. in.) is twice that at 5 ft. (2.1 lbs./sq. in.). (the explained fact).

Again the explanation of these data alone does not establish the hypothesis. More explained data of various types are needed.

Being explained by a satisfactory system of knowledge (5.2). If the Hissarlik hypothesis could itself be tentatively explained by established facts and generalizations, it would then be more acceptable. For example, suppose it were possible to show that the traits of the Trojans and the facts about the geography, climate, and nearby civilization at the time make it probable that the Trojan city would have developed at Hissarlik at the time that Troy was supposed to have existed. If it were possible to show that, the Hissarlik hypothesis would thereby receive support.

Similarly the pressure hypothesis is supported by showing that it can be explained, and thus derived, as follows:

Pressure in a liquid is the numerical equivalent of the weight of a regular column of liquid extending to the top of the container.
The weight of a column of liquid varies directly with its height.
***Therefore,* the pressure in a liquid varies directly with the depth.**

Not being inconsistent with any

evidence (5.3). The Hissarlik hypothesis would be weakened if no springs could be found in the area of Hissarlik, since the *Iliad* mentions two springs in the area, one hot and one cold. The reasoning might go:

> Hissarlik is at the site of Troy.
> There were probably at least two springs at Troy, one hot and one cold.
> Springs tend to remain in existence over the years.
> *Therefore,* it is probable that there are at least two springs at Hissarlik, one hot and one cold.

Note that in using the absence of springs as evidence against the hypothesis, we are assuming that springs tend to remain and that the report of the *Iliad* is reliable. Either of these could be wrong. The less dependable these auxiliary assumptions are, the less dependable is our counterevidence.

The pressure hypothesis would be weakened by the discovery that water spurted out the same amounts at the middle and the bottom, since the hypothesis implies otherwise. That is, it would be weakened if we did not previously have so much by way of other evidence built up in favor of the hypothesis—so much that, in this case, one would have a right to suspect such data.

Its competitors' being inconsistent with the data (5.4). A competitor of the Hissarlik hypothesis is the hypothesis that Bunarbashi is at the site of Troy. This competing hypothesis is not consistent with the data that Bunarbashi is a three-hours' walk from the sea and that the Greeks were able to go back and forth several times daily, if we assume that the Greeks walked.

A competitor of the earlier-stated pressure hypothesis might be one to the effect that the pressure increases directly as one gets closer to the surface of the earth. This hypothesis is inconsistent with pressure gauge readings on two independent tanks, one over the other, when the top tank has the pressure gauge at its bottom, and the bottom tank has its gauge at the top. The alternative hypothesis implies that the gauge in the upper tank would give the smaller reading. The data are just the opposite.

A controlled experiment is designed to rule out competing hypotheses by producing data inconsistent with them. When we test the hypothesis that a new fertilizer will increase the growth of corn, we put the fertilizer in a corn patch, develop a companion corn patch, the control, identical in every respect possible except for fertilizer, and watch the results. If there is a difference, the fertilizer hypothesis can explain it. But it would not be explained by heavy rainfall, warm weather, sunlight, etc., since both patches supposedly received the same amount. These alternative hypotheses would justify a prediction of no difference and would thus be inconsistent with the data.

It is, of course, impossible to develop a perfectly controlled experiment, since the perfect isolation and variation of a single variable is not possible. The important thing might be a *combination* of weather and fertilizer, or the important thing might have slipped by unnoticed. But we can still see in the controlled experiment an attempt to approximate the logical goal of eliminating hypotheses by turning up data that are inconsistent with them. The controlled experiment is an efficient way of eliminating hypotheses by this method.

It should be noted that there is an implicit assumption of standard or familiar conditions in the reasoning that leads to judgments of explanation and inconsistency. For example, the inconsistency resulting from Bunarbashi's being a three-hour walk from the sea is an inconsistency only if Bunarbashi was a three-hour walk from the sea at the time of the Trojan War. In declaring the data to be inconsistent with the competing hypothesis one is gambling that the sea was not at a significantly different level at that time.

This feature of reasoning from hypotheses fits in with the notion of loose reasoning presented under Aspect No. 1. There are always possible qualifications when we apply principles to the world of things, men, and events.

Being testable (5.5). This is a logical criterion, not a criterion of practicality or even physical possibility. The criterion requires only that it must be possible to *conceive* of what would count as evidence for, and what would count as evidence against, the hypothesis. We have already seen that this is possible for each of our hypotheses. The fact that some conceivable tests are not practically possible is not important so far as this criterion is concerned. A conceivable, though presumably physically impossible, test of the pressure hypothesis would involve swimming to the bottom of the ocean with pressure and depth gauges, recording readings at various points along the way.

An hypothesis that appears untestable is this one: "Airplane crashes are caused by gremlins," since it does not appear possible to conceive of something that would count as evidence for and to conceive of something that would count as evidence against the hypothesis. The word "appear" is used deliberately, since the conceiving of evidence for and evidence against would immediately make the hypothesis testable — and would reveal to some extent the meaning of the hypothesis.

Most hypotheses that we consider are testable in this logical sense, so this criterion does not often discredit an hypothesis. But its fulfillment is absolutely essential for hypotheses about the world of things, men, and events.

6. Judging Whether a Theory Is Warranted

The difference between a theoretic system and an hypothesis of the type we have been considering is that the former is an involved network of relations between concepts, many of which are abstract and technical, while the latter is a simple relation between two or a small number of concepts, often less abstract and technical. Examples of theoretic systems are the kinetic theory of matter, the atomic theory, Gestalt psychology, the theory of evolution, Keynesian economics, Turner's frontier theory, and classical English grammar. Obviously evaluation of theories is a demanding task. It demands more than we can ordinarily expect of elementary and secondary students. Undergraduates are sometimes better equipped, and graduate students are expected to become equipped to perform this task.

Evaluating theories is comparable to evaluating hypotheses, but much more complex. In general the same criteria apply but on a broader scale. Two modifications should be noted: the addition of the criterion of simplicity and the weakening of the effect of contrary evidence.

The criterion of simplicity calls for choosing the simpler of two competing systems, other things being equal. The classic example of the application of this criterion is the preference of the Copernican system, which considered the sun the center of the universe, to the Ptolemaic system, which looked upon the earth as the center. The Copernican system was simpler since it needed fewer cycles and epicycles to explain the movements of the planets.

Since theories have so many parts, contrary evidence does not usually result in outright rejection, but rather in adjustment to fit the contrary evidence — until the whole system becomes more complex than a competitor. The criterion of simplicity then functions.

Following are the criteria for theoretic systems. There will be brief comments, but no attempt to exemplify the operation of each will be made, because to do so would be a monumental task and would make rather laborious reading for those not versed in the fields chosen. You are invited to provide examples from a theoretic system in a field you know.

A theoretic system is warranted to the extent that:

6.31 It explains a bulk and variety of reliable data. Within the system, furthermore, the less abstract statements should be explained by the more abstract ones.

6.32 It is explained by broader theories. Some theories are so broad already that, with our present state of knowledge, to demand fulfillment of this criterion is often to demand speculation.

6.33 It is not inconsistent with any evidence. As indicated earlier, occasional inconsistency can be handled by adjusting the theory. Sometimes the inconsistency must just be accepted for lack of a better theory, and we say, "The theory does not hold for this kind of case."

6.34 Its competitors are inconsistent with the data. Again a single inconsistency does not destroy a competitor, for it too can be adjusted, but a larger number of inconsistencies damage it.

6.35 It is testable. When adjusting a theory to fit the data, people are sometimes tempted to make the theory impregnable by making it untestable. Freudian psychology is sometimes accused of being untestable.

6.36 It is simpler than its rivals. As theories are adjusted to fit new data, they may become extremely complicated, as had happened to the entire Ptolemaic system at the time of Copernicus.

7. Judging Whether an Argument Depends on an Ambiguity

The ambiguity can appear anywhere in an argument, but most frequently it appears in a shift of meaning from the sense in which the conclusion is proved to a sense in which it is applied. There is such a shift in the following line of reasoning:

There are people who sincerely believe

on religious grounds that medication is wrong. They believe this because they believe that any treatment of human beings with medicine is a violation of their religious principles. "Medication" means anything intended for the prevention, cure, or alleviation of disease." Since the chlorination of water is intended for the prevention of disease, it is medication. To chlorinate water is thus to violate their religious principles.

The statement, "Chlorination is medication," is proven when the statement has one meaning: "Chlorination is something intended for the prevention, cure, or alleviation of disease." And it is applied with a different meaning: "Chlorination is treatment of human beings with medicine."

Obviously arguments that depend on ambiguities are to be rejected. No criteria can be given that will serve as guides to students in detecting ambiguities, although you can exhort them to be alert with such statements as, "Make sure that the key words are used in the same sense throughout," or "Check the argument using the key word in its ordinary sense, and if it fails, check it using the word in any technical senses that might be employed."

8. Judging Whether a Statement Is Overvague or Overspecific

For the purposes of a given situation, a particular statement might be too vague to provide guidance. In such situations the statement should be rejected or inquired into, since in its condition its truth or falsity is irrelevant.

The statement, "Education has disappeared from the schools" (or, "There is more education in the schools than ever before") is useless in decision-making about curriculum and school finance until the terms, "education," "disappeared," and "the schools," are clarified. The statements are not specific enough to be tested and applied. They are too vague.

On the other hand, in a war-ravaged country it might be quite meaningful to say that education has disappeared from the schools (since they are now used for hospitals or housing). In this situation, "education," even loosely defined, has disappeared from the schools.

This aspect requires consideration of the purpose of the discourse and requires the judgment, "This is (or is not) specific enough for our purpose." If the purpose is to come up with curriculum and budgetary recommendations for a school system long in existence, the statement is not specific enough. If the purpose is to make a report to the leader of a war-ravaged country, it is specific enough.

It might be thought that this aspect of critical thinking is one in which people do not make mistakes. In concrete situations this tends to be true, but in abstract situations it is easy to go wrong by forgetting to put questions and answers in the context of situations with purposes. Crawshay-Williams develops this point well (*1*).

9. Judging Whether an Alleged Authority Is Reliable

In order to assess the statements made by an alleged authority, one must appraise his credentials. Certainly other aspects of critical thinking should also be applied, if one is able to do so. But there are times when one must make a judgment about a statement solely on the basis of the credentials of the person making the statement. An alleged authority should be accepted to the extent that:

9.1 He has a good reputation.
9.2 The statement is in his field.
9.3 He was disinterested — that is, he did not knowingly stand to profit by the results of his statements (except that he may have stood to have his reputation affected).
9.4 His reputation could be affected by his statement and he was aware of this fact when he made his statement.
9.5 He studied the matter.
9.6 He followed the accepted procedures in coming to his conclusion (although there are legitimate exceptions to this requirement).
9.7 He was in full possession of his faculties when he made the statement.

The Reduction of Problem Identification to the Other Aspects

Different kinds of judgments go under the label, "problem identification":

1. Judging that a want has been identified, as when someone says, "My problem is to learn to appreciate poetry." In this sense the judgment that the speaker has identified his problems is tantamount to the judgment that this is something the speaker, who might also be the judge, really wants to do. Problem identification here is identification of wants, either one's own, or someone else's. If they are one's own introspected wants, then critical thinking is not involved. For a person to know his wants (felt needs) is something that he cannot fail to do.

If they are someone else's wants, then identifying problems is the same as establishing explanatory hypotheses, as is the case for all subconscious wants, one's own or someone else's, for example, "Mark's problem is to get attention." Judging the identification of someone else's problem and of subconscious wants are then critical thinking of a type already discussed—judging hypotheses.

2. Judging that a valuable goal has been selected. Here is such a problem identification: "Our problem in Culver City is to increase respect for law and order." Insofar as that is a statement of an end rather than a means, the judgment that it is an adequate identification of a problem is a value judgment. For reasons indicated earlier, this type of judging, though important, is excluded from this analysis of critical thinking.

3. Judging that a means decision is adequate. For example, if the broader objective were respect for law and order, the following might be a statement of a means decision: "Our problem in Culver City is to establish a youth bureau." The judgment here that the problem has been identified does at least these two things: (1) implies endorsement of the goal of respect for law and order (this part of the judgment then is a value judgment); (2) says that the means selected will facilitate achievement of the goal and that they will be at least more likely to facilitate it than any other course of action.

within the limits of existing resources and goals. These limiting goals, by the way, are another instance in which values are impressed on problem identification. To judge that the problem has been identified is to judge that no unjustified goal violation would take place if the problem were solved.

To apply the means interpretation to our example: it is there implied that establishment of a youth bureau would increase the likelihood of winning respect for law and order, and would be more likely to do so than any other course.

Judging a means decision is judging the application of a principle and judging the acceptability of the principle. To judge whether a youth bureau in Culver City would result in increased respect for law and order is to judge whether a principle about the effectiveness of youth bureaus, applied to this situation, gives us this statement with sufficient probability; and to judge whether the principle is acceptable. Judging principles comes under judging generalizations, hypotheses, or theories, depending on the principle in question.

In summary, problem identification is many different things and often a combination of them. Elements capable of being treated under the proposed notion of critical thinking are (1) judging the alleged identification of the wants of others and of subconscious wants (explanatory hypotheses), and (2) judging the assertion of a means of reaching a goal (judging the application of principles and judging the principles themselves). Each of these types of judging is treated elsewhere.

Summary

There has been presented a root notion of critical thinking: the correct assessing of statements, and the presentation and clarification of a list of nine major aspects of critical thinking, which are based upon the root notion. These aspects get at the most important ways people can go wrong in assessing statements and can serve as a statement of elementary and intermediate goals in the teaching of critical thinking.

It has not been the purpose of this paper to suggest how to teach critical thinking, since that would vary so much from one level to another and one subject to another. Perhaps the examples will suggest teaching ideas.

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Developing More Effective Reading

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As I VIEW THE activities in reading during the past year, and as I reflect on the frenzied attempts of teachers and administrators to meet deadlines for submitting applications for funds to implement reading programs, I wonder if perhaps we have not, in our preoccupation with criteria, materials, in-service training, and a dozen other deliberations, neglected the person for whom all of this activity is intended: the child in our classroom. I have participated in dozens of conferences with school districts that have attempted to meet deadlines, and I have sensed the frustration, concern, and disenchantment of those who have finally concluded that additional funds, additional materials, and equipment simply are not going to answer our fundamental curriculum questions as to what constitutes the most effective and efficient means of training a child to read. True, with additional funds we are able to reduce the size of classes in those instances where we can clearly identify economically disadvantaged children; it is also true that additional materials (and we have never before in the history of American education had so much to select from) will implement our teaching of reading; it is true that we are now in a better position to support in-service training of teachers. But, are we, except in rare instances, more clearly identifying the means by which we may do better teaching and the methods and techniques which may yield better results?

Are we going to be able, within a period of a few years, to furnish evidence that money, effort, and materials have resulted in better readers? It seems to me that we *must;* otherwise, we will have merely furnished additional evidence to those critics of our educational system who during the past decade have maintained that we are not teaching reading properly. We have responded to the critics and listed overcrowded classrooms, mobility of children, undertraining of teachers, and lack of sufficient funds for materials and equipment as reasons for the problems which we admit do exist in the teaching of reading. Are we, now that we have additional funds for solving those particular problems, in danger of becoming complacent and continuing to overlook the basic problem of pedagogical and psychological factors that may contribute to improved reading programs? Certainly we are in a better position to foster research, to encourage innovations in methods, materials, and classroom organization. We can and we must examine more thoroughly than ever before exactly what it is we mean when we speak of developing more effective readers.

What are we referring to when we speak of efficiency and effectiveness in reading? Perhaps we can begin to explore this by describing what I believe is an effective reader.

The effective reader is one who has mastered the skills of attacking words, simultaneously employing phonics, structural analysis, and syllabication to the point of having established a broad sight vocabulary and using those skills judiciously each time he encounters a new, unfamiliar word. In the beginning, the reader employs all of the cues available to him; as he becomes more efficient in attacking words, he deliberately reduces cues. Word attack skills are virtually at the sub-conscious level, except for those times when the reader must consciously summon his knowledge of analysis and use his skills to pronounce and gain meaning of new words. We need to know, through careful research, what contributions can be made to word analysis skills through linguistics, programed

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learning, non-traditional orthography, and other means that have not been thoroughly explored. We agree that word-calling is the basic step in the spectrum of reading skills; however, it is so easy to be misled by efficient word-calling and to assume that if the child has that skill, he is a good reader.

The word-caller becomes a more effective reader when he applies his skills of word analysis to the development of a rich and varied vocabulary and experiences through reading of a wide variety of materials the range and quality of word power. He examines the multi-functions of words, thrills at the author's choice of words that uniquely communicate time-worn ideas and make them startlingly new and provocative. He pursues the rich and varied histories of words as they have been used to relate the evolution of ideas; and he perceives language as a rich fabric into which good writers artfully weave their sensations, their perceptions, and their concepts.

There have been hundreds of articles written about the development of vocabulary, but how many of these articles have we translated into classroom practice? Are we not, as teachers, guilty of too much emphasis upon the synonomy and denotations of words, simply because of convenience? What are we doing to acquaint our children with the historical aspects of language and semantics? Are we engendering in our classrooms a sense of excitement and wonder about what language can do for and to the lives of our children?

As early as 1917, Thorndike published his study of the ways in which children may misinterpret what they read. He pointed out that the reader becomes so preoccupied with the overpotency of certain words that he misses the message of the writer. Russell's more recent study of children's thinking has underlined Thorndike's original thesis. The reader who reads with a purpose employs thinking and can calculate what is relevant or irrelevant to his purpose. He sees not only the obvious, surface meaning of what he reads, but he plunges below and searches out to the periphery of what he reads. He assumes that he must bring to the printed page both experiences that have been directly gained and those that have come from vicarious sources. He demands that the printed page say something to him and sets aside his own judgment until the author has been granted a full hearing. He does not focus on details alone, nor is he content to identify the main idea unless he understands and sees details in relationship to the main idea. The types of questions which are asked by the teacher may determine whether the child develops habits of inquiry as he reads. If questions are posed which require nothing more than a return-in-kind of the author's statement, only memory, and not thinking, is encouraged.

Using his past experiences as a touchstone, the efficient reader evaluates what he reads. He responds creatively to the author; he has a choice of imitating what the author has said or taking the ideas and modifying, supplementing, or rejecting them on the basis of his own past experience and knowledge. Using his experiences occasionally as a basis for a real argument with the writer he assumes the responsibility of setting up a conversation with the author. Sometimes the inexperienced reader fails to grasp the significance of what a writer has said because he is not skilled in reading between the lines; he reads literally what is clearly stated and fails to realize that the author has implied ideas that he assumes the reader should be able to grasp. Many of the materials which have been developed to aid children in becoming more evaluative fail miserably in providing the proper stimulus. For the sake of convenience, questions can be answered with a word or two, or by a selection of alternatives. The child is not faced with the problem of "digging out" on his own the ideas expressed by the author. In the final analysis, the child should be able to answer such questions as "What ideas does the author express that modify or support my thinking?" "What have I learned from this selection that gives me broader understanding of the topic?" or "What, precisely, does reading this selection mean to me?"

The effective reader is one who disciplines himself to read with the whole intent of his mind. He realizes that true reading is more than a cursory encounter with ideas; he approaches each act of reading with the full intention of gaining something, whether it be pleasure or information—two categories that need not be mutually exclusive. In the average home or school, the child must select among many media for learning; he must learn to shut out the cacophony of the television, the radio, conversations and discussions of fellow students and family members, and other extraneous noises in his environment in order to give full attention to a book. A critical factor in good study skills is overcoming distractors that pull one from the reading act; the book offers one advantage that other media of communication do not: one may return again and again to the book, in all types of situations, and find it unchanged. Further, with the book the reader may set his own pace; he may, in the words of Browning, "plunge soul-forward, headlong into the book's profound." The reader may establish a personal relationship and a conversation with an author that may be maintained throughout a lifetime.

The effective reader is one who becomes increasingly sensitive to the styles of the writers he meets. He learns to judge good writing and to reject writing that does not meet the standards of his own choice. He senses the color, the tempo, and the tone of good writing. Through reading all types of literature—the good and the bad, the mediocre and the outstanding, the contemporary and the classical—he may establish for himself the standards by which he might judge excellence. Our job as teachers is to introduce the child to all types of literature and to guide him in developing judgment. Critical reading is frequently an individual, not a group, process. However, the young reader should have countless opportunities to discuss his ideas with others, under the careful guidance of a teacher whose lessons are problem-centered. The teacher sets the pace, provides the opportunities for problem solving, and frequently asks the questions. But, if he is to become a critical thinker, the student must ask his own questions and seek his own solutions. He must learn that there are no easy solutions to great problems; he must be led to examine hidden assumptions, to evaluate the logic of writers, and to suspend his judgment until all of the facts have been gathered. Having arrived at this point, he should learn that there are no prescribed boundaries, no real terminal points for most learning. The solution of a problem, offered by one writer, should lead the young reader to a consideration of alternatives that will require reading the works of other authors and engaging in more thoughtful research.

The effective reader is one who regards speed of reading as a mere convenience for doing more reading, rather than as an end in itself. He has learned to adjust his rate of reading to the purposes for which he reads, to the familiarity of the content, and to the very nature of the writing itself. He knows that there is no one acceptable rate of reading that will sustain him in all of his reading; he is content to read some things with the speed of the wind, while at other times he reads with deliberate attention to each word, each phrase, each sentence, with no regard for the time consumed in reading the selection. He is much more concerned with the number of ideas per page than with the number of words per minute.

The effective reader learns to read to remember. He learns to file, to retrieve, and to refile information with ease. He becomes systematic in the search for knowledge. He extends his reading skills to gathering information, organizing information, and reporting information accurately. Through skillful organization and assimilation of ideas, he develops good learning habits for remembering what he has read and being able to associate what he has learned with new ideas.

The effective reader reads widely and frequently. He applies his skills throughout the day to all areas of the curriculum. Through the years he will associate with the greatest minds of all generations. Through reading the works of men and women, he associates with people who are wiser and more experienced than he. His young mind stretches toward adulthood and anticipates the role that he may eventually play in his own adult life.

These, then, are some of the ideas concerning the goals we are seeking in improving our reading instruction for developing more effective readers. How clearly the child sees these goals will depend upon the skill of the teacher; money, materials, equipment, and classroom organization *may be* the means by which the teacher and the child more efficiently achieve these goals.

Reading is Thinking

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MY CHILD can't read!" is a common complaint of parents. When asked what they mean, parents explain that Johnny doesn't have the necessary phonic skills to learn words. It is true that word (telling-the-child-the-word) method of teaching beginning reading has produced many nonreaders and crippled readers. While phonic skills are essential in learning to read, reading needs are not met by massive doses of isolated drill on phonics.

It is true that too many children do not know phonic and other word-learning skills and are, therefore, handicapped in their reading. There is also evidence that more of our pupils need help on *how to think* in a reading situation. But too often parents believe their children can read when they are merely pronouncing words.

Most parents can tell that a child is reading poorly or not at all when he cannot identify written words. But it takes a competent teacher to identify the six-year-old who repeats the exact words of an author to answer a question, the eight-year-old who does not relate names (antecedents) to pronouns, or the older student who has not learned to tell the difference between facts and opinions. In short, professional competence is needed to assess the learning needs of pupils and to guide their development into truly able readers.

Strategy

For developing thinking skills and abilities, highly competent teachers have in mind a well-conceived master plan:

How to identify and provide for individual differences in needs and levels of achievement within the classroom (*1*). Master teachers recognize the limitations of standardized tests for estimating an individual's (1) independent reading level, (2) teaching or instructional level, and (3) specific needs. For this reason, they make maximum use of systematic, informal observations of pupil behavior in reading situations. They know that a pupil cannot be taught how to think when the instructional material is so difficult he finger points his way slowly under each word or gives up in despair. They also know that the best reader in the class can realize his full potential only when he is dealing with interesting materials that challenge his thinking. Therefore, they *plan in advance* to organize their classes in different types of groups to provide equal learning opportunities for all pupils.

How to identify and classify comprehension needs, as a basis for when and what to teach (*3, 13, 14*). Competent teachers preplan—that is, map their strategy—to teach children how to think in different types of read-

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ing situations. They consider large groups of pupil needs:

1. Does the group have the necessary personal experiences for making a concept? Hal, for example, cannot estimate the distance from New York to San Francisco. During the discussion, however, he tells about a 500-mile trip to visit his grandmother, which he had helped to plan on a road map. His teacher helps him to use his personal experience with 500 miles to estimate on a map of the United States the 2600-mile airline distance. From this point, Hal continues to develop his concepts of space. Equally important, he takes new interests to reading.

2. Does the group use language effectively to deal with ideas (*2*)? Language serves at once to express and to shape our thoughts. In other words, we think with language. For this reason relatively simple language may be used to discuss everyday ideas, but complex language is used to discuss abstract ideas.

Penny, ball, dictionary, and *raccoon* are labels for things in the physical world; that is, we can point to *a ball* or *a dictionary. Roundness,* on the other hand, is a quality, or an abstraction. *Cottage, dwelling,* or *structure* can be used to represent different levels of abstraction. In life we can point to *a cottage* but not to *cottage,* to *a dwelling* but not to *dwelling,* to *a structure* but not to *structure.* At their successive levels of abstraction, *cottage, dwelling,* and *structure* are shorthand representations of increasingly complex concepts. It is with these nonverbal and verbal abstractions that we do our thinking. So, we teach pupils how to abstract and generalize, and help them develop an awareness of their use of abstractions.

And, or, but, for, etc., are connecting words which get their meanings from language. They connect or show relationships between ideas. The meanings of these words are taught, therefore, in their language settings.

Ten, minute, mile, and other definite terms can be interpreted when the pupil has certain concepts of quantity, size, etc. However, he may trip over *almost, long, soon,* and other indefinite terms unless he has been given cause to think about their relative values.

To improve the interpretation of what he reads, the child is made aware of the important ways in which the meanings of words shift. For example, *talent* may mean "musical talent" or "the Biblical thirteen talents"; that is, two different things.

Comprehension is improved by an understanding of the structure or organization of language. Often the sentence gives a clue to the meaning of words. An appositional explanation ("Thor, the god of war,") may tip the scale of understanding. An index type of clue may explain a new term: "The *thralls* were the carpenters, the fence builders, the fagot carriers." Then again, a classification type of clue gives needed detail: "These people lived on the valley's neat farms and sowed barley, wheat, and other *grains.*" These and other types of context clues are considered in the teacher's strategy to improve thinking abilities.

Relationships between subject and predicate, between modifying and independent clauses, and between modifying phrases and other sentence elements are hazards to comprehension until the child understands them. Equally important are the meanings of different types of linking, separating, and enclosing punctuation, as, for example, when the dash is used to "direct the reader's attention backward" (*15*).

How an author develops a story or presents information, as a basis for preparing a teaching plan. Master teachers have learned that the best motivation for reading is the pupil's inner drive to learn — his questions and other expressions of purposes. Consequently, they plan to know each selection used for intensive directed reading activities with a group. This knowledge helps them take the group smoothly and promptly into the introduction of a well-written story or informational selection.

The introduction is usually a brief, stimulating setting for the story. For example, the title of Lee Wyndham's "Grandma's Ostrich" causes both children and adults to ask, "Why did Grandma have an ostrich?" This question is answered clearly and provocatively in the first few paragraphs.

When teachers *know* a selection, they can skillfully guide the pupils' reading from the introduction into the main body of it. After the pupils learn that Grandma "inherited" the ostrich from a defunct circus of which she was part owner, they always ask, "What did Grandma Jones do with the ostrich?" Reading to answer this question takes them through the main part of the story.

When the pupils learn how Grandma Jones taught the ostrich to behave, they usually ask, "But will she be able to keep him?" As they read the conclusion of the story, they learn how a special event resolved the conflict, leaving them with a sense of satisfaction.

By *planning* their strategy before using a selection to develop skills, master teachers prepare themselves to develop (1) *interest,* (2) *phonic* and other word-learning skills, and (3) *thinking* abilities in the field of action — the guided reading of the story.

How a teaching plan is organized as a basis for making the best use of teaching opportunities. When competent teachers guide individualized reading they plan ahead to make accessible to their pupils (1) books at their *independent* reading levels and (2) books that can be used to develop new interests and skills. When guiding a directed activity in a basic reader, however, they group the pupils so that the first reading is done at the teaching or instructional level, and the rereading can be done independently (*1*).

These master teachers know that a selection or a book challenges their pupils when it presents new learnings. They also know that when a child is frustrated by the difficulty of the material, interest wanes sharply and comprehension is defaulted.

When making systematic use of a basic textbook teachers familiarize themselves with the strategy of the authors — the organization of the teaching plans. First, they learn how the pupils are prepared for reading a selection, especially the attention given to developing interests and concepts to be taken to it.

Second, they note the kinds of suggestions given for guiding the first or silent reading of it. In this part of the plan they give special consideration to the ready availability of specific help on both phonic and thinking needs which may arise.

Third, they evaluate informal suggestions, study-book use, and other help given for rounding out learning experience so that growth is insured.

Tactics

One of the earmarks of a successful teacher is the ability to plan strategy for insuring the necessary conditions of learning. Skillful planning (1) places a premium on individual differences, (2) permits a sharp focus on the specific thinking needs of the pupils, (3) makes the most of the teaching opportunities in instructional material, and (4) gives a set for the wise selection and use of tactics or teaching procedures. Above all, the teacher is free to use the author's guide book with discretion.

Master teachers plan to help their children find out "what the author says"; that is, do literal reading. But they do much more: they plan to have the pupils learn how to "think about what the author says," to do critical reading (*4*).

In preparing the pupils for reading a selection in a story book, for a study-book activity, or for pursuing a major interest in some curriculum area, master teachers guide them into *thinking* about "what we know" and "what we want to know." The first step assesses their interests, attitudes, and concepts which they take to the activity. The second step heightens interest and establishes clear-cut purposes to guide their thinking. In short, the teacher uses sound tactics for starting the pupils on the road to critical thinking, to the considered evaluation of ideas and concepts.

With a general purpose and specific questions in mind, the pupils are ready to locate and evaluate sources of relevant information. This activity requires a consideration of the reputation of authors, dates of publication, etc., even when using basic readers and study books.

In surveying the materials the pupils are made aware of the difference between facts and opinions. They learn, for example, that the following are statements of fact because they are verifiable:

"In August of 1620, two vessels sailed from England, headed for the new world."

"The temperature in this room is 80 degrees Fahrenheit."

They will learn that a great many statements are opinions, or expressions of attitudes, and are not verifiable:

"You will have fun with it."

"This room is hot."

When pupils learn to discriminate between facts and opinions they tend to do less arguing and more discussing. Equally important, they are better prepared to select information *relevant* to their purposes.

In testing the relevance of material pupils learn to answer these questions: (1) What does the author say? (2) Is the statement a fact or an opinion? (3) Does the statement answer my question? (4) How can I use this statement? (5) What other help did the author give on my question?

Many kindergarten children learn to judge between highly relevant and totally irrelevant statements. As children learn how to think at succeeding school levels, they make closer judgments of the relevance between statements.

Judging the relevance of statements to purposes plays a major role in thinking. First, the pupil evaluates relevance of sub-points to each other and to the main points in an outline. Furthermore, he consistently uses questions or statements, sentences or phrases to parallel language structure with his ideas. Second, he evaluates relevance in visualizing both stories and information: sequences of important events in a story or experiment, organization of material on maps, charts, slides, etc. Third, he uses relevant facts in solving a mystery, in using the results of an experiment, in making social judgments, etc. That is, straight thinking is required for drawing conclusions from related facts or from cause-effect relationships (*5, 10, 11, 12*).

In following through on their strategy for teaching children how to think, teachers are confronted with a subtle, but potent, tactical situation: Attitudes. This situation can be summarized as follows.

1. The child's interpretation of a selection depends upon the attitudes he takes to it. Therefore, preparation for reading includes the assessment of attitudes toward the topic. Favorable attitudes increase comprehension, while unfavorable attitudes interfere with comprehension.
2. The child's attitudes influence recall. Favorable attitudes promote ease and vividness of recall, and unfavorable attitudes tend to produce hazy, confused ideas.
3. Favorable attitudes increase interest in a topic or a type of selection.
4. Individual attitudes are modified by peer discussions.

In Summary

Contrary to popular opinion, children can be taught how to think. Their ability to think is limited primarily by their personal experiences and the uses they make of them in problem solving, in abstracting and generalizing to make concepts, in judging, and in drawing conclusions. Under competent teacher guidance children gradually learn to think, within the limits of their rates of maturation, or inner growth (*6,8,9*).

From available evidence it appears that children who have not learned to think far outnumber those who have not learned necessary phonic skills. (Both, of course, are crippled readers or non-readers!) Consider the number of children who can pronounce *fearless,* for example, but who think it means "afraid." How many children cannot divide 1/3 by 4 because they have merely memorized a meaningless rule about "inverting and multiplying?" Or, how many high school graduates cannot subtract a minus 2 from a plus 10, because they have never related the mathematical process to the use of a thermometer? How many children can pronounce astronomical numbers and yet cannot estimate the coast-to-coast distance across the United States? How many children try to achieve variety of sentence structure by the mechanical rearrangement of sentences rather than by the careful consideration of the ideas they wish to express? The answers to these and related questions offer undisputed evidence of the need for teaching children how to think.

The mere pronunciation of words, the memorization of phonic or mathematic rules, and other emphases on rote memory and mechanics lead to the use of empty words. This false security in words leads to the acceptance of a carload of words without a single idea. The acceptance of word manipulation rather than the thinking about ideas is called *verbalism*. And verbalism can become a malignant disease in education, dooming the would-be learner.

But there is hope, real evidence of progress in understanding the strategy and tactics of teaching children how to think. In the last ten years, four outstanding books have been published on the psychology of thinking. Writers of pedagogical textbooks in social studies, science, arithmetic, and reading have begun to apply the conclusions reached by psychologists. Lastly, it is highly significant that this issue of THE READING TEACHER is dedicated to the proposition that children can be taught how to think.

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Concept Development and Reading

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THE GOLDEN MEAN of concept development is not like the mathematical mean. It is not an exact average of points, scattered along calculable extremes. It fluctuates with the collateral circumstances of each situation. It fluctuates with the person, who brings with him his past relations to his world, his emotional dispositions, his capacity to think, and his expectancies for the future. It fluctuates with the nature of the concept to be achieved—its composition, structure, and operation. It fluctuates with the pressures that exist in the situation, and with the consequences of the action to be taken. It is discovered only in the mature and flexible grasping of concepts formed on an abstract level and applied to new concrete situations.

Concepts are in good part the gift of innocent intent; but in the marketplace of the scholar they are the achievement of experience, and knowledge, and the higher intellectual functions. Required is a tough, not a tender, mind—a mind whose main features are reflective awareness and deliberate control, tempered by warm-blooded affective inference. These features are being formed and molded and used as the child passes from the stage of undifferentiated functions in infancy to the differentiation and development of perception, intention, and memory of childhood. School-age children possess these functions in some strength, and during the early school years they grow steadily in awareness and mastery, until they are capable of conscious and deliberate control and creative use. Concepts—scientific concepts—form the bases of a "mediated" attitude toward consciousness and deliberate use which characterizes that maturity of mind known simply as the art and method of correct thinking. This is a maturity that, even though it exacts order, does not exile that creative liberty which is the soul of art.

Concepts have in one form or another been of tremendous import in both theory and practice from the Greeks to the present day. The great "either-or" (*4*) contribution of the Greeks provided the thread of scientific development and helped them carry on their experiments and observations in a more varied and detailed manner. The direction for concept attainment was clearly pointed out when Aristotle indicated that meaning could be given to things only by classifying and generalizing them, and when Socrates went about prying into things, uncovering assumptions and questioning certainties. "Prudens quaestio dimidium scientiae—to know what to ask is already to know half" (*2*). Across the centuries scholars have ridiculed rote memory and its alleged role in the learning-thinking process. Leo

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Tolstoy is quoted as an apt illustration of this protest when he found that children should not be taught by artificial explanations, compulsive memorizing and repetition. ". . . to give the pupil new concepts deliberately . . . is, I am convinced, as impossible and futile as teaching a child to walk by the laws of equilibrium" (*7*). Needed, he said, is the chance for children to acquire new concepts and words from their general linguistic context.

Concepts are the cognitive structures which each child must develop in the course of intellectual functioning. It is only through functioning that concepts get formed. This is as true of the first simple habits established by the infant through the most elementary of sensory-motor acquisitions as it is of the mature adult for whom representational thought has become hypothetico-deductive and is oriented toward possibilities, the lattice of all-possible-combinations. As Piaget and others argue, we do not inherit cognitive structures but we do inherit a means for attaining such structures as our biological heritage. And most important of all, this mode of functioning remains essentially constant throughout life. It is always and everywhere the same. It is because of this constancy of functioning, despite the wide varieties of cognitive structures which can be created, that concepts are referred to as functional invariants (*3*) or as functional constants.

Concepts are a unifying and an integrative force which, under the sway of the child's cognitive skills, provide the intellectual wherewithal for dealing with a wide variety of overt and covert experiences. Flavell (*3*) provides a most useful generic image in this regard when he speaks of the child:

> . . . for whom the world is beginning to stand still and stay put, a world which, like the child himself, knows something of law and order, and above all a world in which thought really counts for something, in which thought can be a more trustworthy guide to action than perception.

In addition, it seems that in certain crucial respects a wide variety of cognitive areas (number, quantity, time) are mastered according to a common procedure, and this discovery, Flavell says, was "an act of creative inspiration" on the part of Piaget.

Concept development merits a first order rating in the teaching of reading as a thinking process. This is so because concepts are cognitive structures acquired through a complex and genuine act of thought, and they cannot be absorbed ready-made through memory or drill. A concept is symbolically embodied in a sign, usually a word, and, as such, a word represents an act of generalization. Printed words are the representational symbols used in reading and writing and are the written counterparts of speech. In mastering speech the child starts with a word, and both the vocal and semantic aspects are expressed dimly and amorphously in a single word. Even so, at first the word is a generalization, and *da-da* as applied to all men and not women is gradually replaced by a generalization of a higher order and leads in the end to a truer concept of *father*. When the child connects two or three or more words he gradually advances to simple sentences and then to complex ones. When this occurs, the structure of words no longer mirrors the structure of thought. That is why words in and of themselves cannot simply be added ready-made to thought. The relationship between thought and word is not a symbol-experience "thing," but a process—a process that is undergoing constant change. Syntactically the child may start with one word, then two or three, and then simple and complex sentences. Semantically, however, he starts from a whole—a meaningful complex—and gradually learns to divide and master the separate cognitive structures. The structure of speech develops from the particular to the whole, from word to sentence; and the structure of meaning, from the whole to the particular (7). If children are to acquire concepts and words to represent them, they must make use in varying degrees of efficiency of such intellectual functions as deliberate attention, logical memory, abstraction, the ability to note likenesses and differences, and so on. To successfully instruct a school child, methods must be employed that will require pupils to be articulate about and put to deliberate use such intellectual functions.

Comprehension as a functional invariant of all reading instruction requires that from the very beginning of instruction the reading-to-learn phase takes precedence over the learning-to-read phase. The semantic and syntactic aspects of the developmental process of learning-to-read are essentially one, precisely because of their similar directions; whereas in speech this is so precisely because of their reverse direction. The child learning to read brings with him the rich supply of concepts, meanings and words, acquired in his world of oral communication and needs only to learn to recognize printed symbols of speech. As learning progresses the instructional emphasis should rapidly shift from recognizing printed words to concept development, because reading in all phases of the curriculum and further school work becomes a principal source of knowledge or of cognitive structures. The everyday concepts and words the child brings with him to school and builds on in his early school life are roughed and hewed from experience of the face-to-face concrete variety. The acquisition of concepts of an historical, geographical, sociological, numerical, scientific (and so on) nature evolves from a certain level of maturation of everyday concepts and a "mediated" approach which gives them body and vitality (7).

What Is a Concept?

Definitions of a concept by different authorities are to a good degree in agreement about the specifics involved: inferences, attributes, categories. Even so they are different as they reflect an author's point of view and attempt at clarity. As in so many cases, understanding seems best facilitated by illustration, and an account of concept formation and attainment may prove more useful than a definition. It is interesting in this regard, and also illustrative, that Bruner, Goodnow, and Austin do not define a concept until page 244 of their text on *A Study of Thinking* (*1*), where it appears as a summation of an extensive account of the process of concept attainment. Vygotsky did likewise in his text on *Language and Thought* (*7*).

Basically, concept formation consists of the perception of relationships—relationships among stimuli as one author put it (*6*)—or relationships between constituent part processes, as others put it (*1*). Bruner *et al.* go on to say, though, that "The working definition of a concept is the network of inferences that are or may be set into play by an act of categorizing" (*1*). They have found it more meaningful, however, to regard a concept as:

> . . . a network of sign-significate inferences by which one goes beyond a set of observed criterial properties exhibited by an object or event to the class identity of the object or event in question, and thence to additional inferences about other unobserved properties of the object or event.

To this definition they add clarity by means of an "apple" illustration. An object is seen. The object has criterial properties. A set of these criterial properties is observed as *red* (a shade of color), *shiny* (a degree of brightness or dullness of appearance), and *roundish* (shape). Undoubtedly other properties or attributes are observed even though they are unlisted by Bruner, who assumes apparently that the three listed are sufficiently illustrative. Now the network of sign-significate leads the observer to conclude that the object observed is an apple. As an apple, the object has class identity. To make this inference, the observer, as pointed out, undoubtedly noted other criterial properties of *apple* since any number of other things also possess the properties *red, shiny, round* (ball, nose, tomato, glass). Also observed must have been fruit qualities, texture of surface, shape, and so on. On the basis of the inferences made thus far, particularly the class identity, other assumptions may now be made. Assumptions or inferences may be defined as a weighted average of previous experience and knowledge. The inferences are based on unobserved properties and result from extrapolations—a going beyond the information immediately given. It could be assumed, for instance, that the apple is delicious and possesses therefore a certain relation of sugar to acid content, or that it is nonpoisonous and is uncontaminated by sprays. Or, it might be assumed that, if left unrefrigerated, it will rot after a certain period of time. It is apparent, then, that when these complex concepts are wisely made and appropriately used, we can reach new generalizations or concepts for which we have no direct evidence at the moment.

It seems obvious, as Vygotsky says, that when a concept is a part of a system it can become subject to conscious and deliberate control. Consciousness he defines as "awareness of the activity of the mind," and this self-reflective awareness of meaning always implies a degree of generalization. Generalization, he says, in turn means the "formation of a superordinate concept" that includes as a particular case the given concept (7). Vygotsky says:

> A superordinate concept implies the existence of a series of subordinate concepts, and it also presupposes a hierarchy of concepts of different levels of generality. Thus the given concept is placed within a system of relationships of generality.

He illustrates this emergence of a system by analyzing the circumstance in which a child has learned the word *flower* and later learns the word *rose*. For a time, the child may now use the two words *rose* and *flower* interchangeably. When, however, *flower* becomes generalized and more widely applicable and includes and subordinates *rose*, the relationship of the two changes in the child's mind. Thus, he says, a system is taking shape, and the child's knowledge of *flowers* as a superordinate concept and *rose* and other similar subordinate concepts is becoming systematized.

Klausmeier quotes Bruner's definition of a concept and indicates that it serves well as an operational definition in experimentation with strategies. Then he goes on immediately to tell how a concept is attained (5):

> In general terms, an organism senses environmental phenomena, discriminates between and among them, perceives common elements among some of them, and categorizes or classifies various phenomena as belonging to the same class or kind. The resulting abstraction or concept, often represented in a word or other symbol, is comprised of the meanings – network of inferences – associated with the abstraction.

Reference is made here to Klausmeier's general account of concept attainment because he has maintained the experimentation with strategies focus, has described attainment in terms of an immediate perceptual act (the experimental use of cards with discriminably different information on each card), and has indicated that the abstractions obtained are usually represented by a word or other symbol. This interpretation is excellent for experimental situations of the perceptual variety studied in both the Harvard and the Wisconsin experiments. It is necessary, though, for teachers of reading as a thinking process to keep in mind the fine distinction Bruner makes between "perceptual" and "conceptual" forms of categorizing or concept attainment.

In *perceptual* categorizing, the relevant attributes used are immediately present and can be examined firsthand. The fitness of an object to be judged a member of this or that category is determined by the attributes immediately at hand. In *conceptual* categorizing the relevant attributes are not available to "sensory" examination and are therefore neither as readily determined nor as readily weighed as to their relevancy. Two illustrations may help bring this aspect of categorizing into clearer focus. In the field of history, supposing one wished to show that in 1840 the Whigs had chosen William Henry Harrison as their candidate for the presidency—not because he was a well-educated gentleman-farmer and public servant who was fond of quoting the Latin classics, but because they had stolen a page from the Jacksonian Democrats and nominated a popular military figure. The choice led to a memorable slogan—"Tippecanoe and Tyler, too!" — which helped to defeat the incumbent president, Jacksonian prince-consort, Martin Van Buren. This would require a difficult and careful search of attributes and, most likely, a validation by concensus. Similarly, to plan and prepare a Manned Orbital Research Laboratory which can be used to study man's ability to live in space as a necessary step toward achieving interplanatary space travel is requiring a most exacting defining of attributes, as well as the creating of new categories on logical grounds until appropriate means are available to prove that the conclusions reached are test-worthy and sound.

It is readily apparent that to judge an object as being an *apple* and testing to prove it so is far more readily accomplished than to judge a historical means for electing a president or scientifically putting into operation a Manned Orbital Research Laboratory. Readily as apparent should be the fact that operations of the *perceptual* type are quite *concrete* in nature as compared to the *abstractness* of *conceptual* operations. As a matter of fact, it might be less confusing to refer to them as concrete and abstract because of the likely confusion that may prevail if "concept" and "conceptual" are not carefully discriminated. Even though perceptual situations lend themselves to laboratory experimenting, and conceptual situations tend not to, and even though perceptual cases deal with observable attributes, and conceptual cases deal primarily with cognitive attributes, the basic processes of categorization are the same.

In summary, a concept is a network of inferences that are discriminated and categorized as belonging to the same object or event (class or kind), which provides the bases for inferences about other categories, and is usually represented by word(s) or other symbol. Concepts may be defined on a subordinate and superordinate basis and classified as a part of a system. In addition, they may be classified as perceptual (concrete) or conceptual (abstract) depending on the source of the attributes being used.

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Characteristics of the Culturally Disadvantaged Child

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WHO IS the educationally or culturally disadvantaged child? What are his characteristics? What are some of the factors of his environment which affect his educational achievement? These questions, together with a determination of procedures which will compensate for or ameliorate his disadvantage, are areas of great and grave concern, not only in Chicago, Los Angeles, New York, and other great cities, but in many other areas which are in economic and social transition.

Who is the educationally or culturally disadvantaged child? The answer varies from state to state, from city to city. He lives not only in the central area of our great cities. One southern governor in January 1964 declared that 20 per cent of the citizens of his state can neither read nor write, that 50 per cent of the state's young people fail to complete high school. The disadvantaged child is of no single race or color: poverty, delinquency, failure to achieve the goals established by the main stream of society are shared by peoples of all colors and national origins.

The disadvantaged individual may derive from a culture which is rich in its own tradition, but which no longer prepares its members for successful participation in society. The change in economic patterns apparent over the past half-century was intensified by World War II. People from submarginal farms have been forced into cities, while in the cities jobs for the unskilled are decreasing. Thousands have learned that their older ways of life no longer are effective.

What are the characteristics of the culturally disadvantaged child? He is no stranger to failure and to the fear that continued failure engenders. He knows the fear of being overpowered by teachers who are ignorant of the culture and mores of his society, and who may not expect success of him. He fears lack of recognition and understanding from teachers whose backgrounds are totally dissimilar and who either misinterpret or fail to recognize many of his efforts to achieve and to accommodate himself to demands which are basically alien.

Riessman (*8*) describes these characteristics of the deprived individual: (1) is relatively slow at cognitive tasks, but not stupid; (2) appears to learn most readily through a physical, concrete approach (often is slow, but may be persistent when the content is meaningful and valued); (3) often appears to be anti-intellectual, pragmatic rather than theoretical; (4) is traditional, superstitious, and somewhat religious in a traditional sense; (5) is from a male-centered culture, except for a major section of the Negro subculture; (6) is inflexible and not open to reason about many of his beliefs (morality, diet,

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family polarity, and educational practice are examples of these beliefs); (7) feels alienated from the larger social structure, with resultant frustration; (8) holds others to blame for his misfortunes; (9) values masculinity and attendant action, viewing intellectual activities as unmasculine; (10) appreciates knowledge for its practical, vocational ends, but rarely values it for its own sake; (11) desires a better standard of living, with personal comforts for himself and his family, but does not wish to adopt a middle-class way of life; (12) is deficient in auditory attention and interpretation skills; (13) reads ineffectively and is deficient in the communication skills generally, has wide areas of ignorance, and often is suggestible, although he may be suspicious of innovations. Other delimiting characteristics reported by Riessman have been included among the factors discussed in later paragraphs.

In assessing some of the strengths of this group of children, Riessman describes them as: (1) being relatively free of the strains which accompany competitiveness and the need to establish oneself as an individual; (2) having the cooperativeness and mutual aid which marks an extended family; (3) being free of self-blame; (4) enjoying other members of the family and not competing with them; (5) having the security deriving from an extended family and a traditional outlook; (6) enjoying games, music, sports, and cars.

The following factors, reflecting the conclusions of many persons who have studied the causes and results of cultural disadvantage, are believed by Dr. Newton S. Metfessel (6) to be operative in the lives of children from disadvantaged homes.* The grouping of these factors and the remarks relative to them are the work of this writer.

Language factors. One such grouping may be termed language factors:

1. Culturally disadvantaged children understand more language than they use. This comparison between understanding and usage does not imply a wide hearing or understanding vocabulary. Figurel (5) reports that at grade two the vocabulary of such children is approximately one-third that of normal children, while at grade six it is about one-half.

2. Culturally disadvantaged children frequently use a great many words with fair precision, but not those words representative of the school culture. Figurel states that "less than half of the words in the vocabulary of pre-school children are known by second-grade children in slum areas." He also states that "common name words, such as ***sink***, ***chimney***, ***honey***, ***beef***, and ***sandwich*** are learned by culturally disadvantaged children one or two years later than by other children."

3. Culturally disadvantaged children frequently are crippled in language development because they do not perceive the concept that objects have names, and that the same ob-

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*Reported with the permission of Dr. Metfessel, Director of the Center for the Study of the Education of Disadvantaged Youth at the University of Southern California.

jects may have different names. The impoverished economic conditions under which these pupils are reared, with a scarcity of objects of all types, and the absence of discussion which characterizes communication in the substandard home prejudice against the development of labels and of the concept of a specific name (or names) for everything.

4. Culturally disadvantaged kindergarten children use fewer words with less variety to express themselves than do kindergarten children of socio-economic classes. The use of language by the child chiefly to express his concrete needs, and by parents and other adults to command the child to perform some function, may contribute to the severe limitation of self-expression.

5. Culturally disadvantaged children use a significantly smaller proportion of mature sentence structures, such as compound, complex, and more elaborate constructions. This is not limited to the non-English speaking child, but occurs among most children who come from culturally disadvantaged areas.

6. Culturally disadvantaged children learn less from what they hear than do middle-class children. The importance of teaching all children the skills of listening has often been pointed out. This appears to be particularly true for disadvantaged children, who come from a milieu in which the radio, television, and the sounds made by many people living in crowded quarters provide a background of noise from which the individual must retreat.

Learning patterns. The next grouping of the factors assembled by Metfessel have to do with learning patterns:

1. Culturally disadvantaged children tend to learn more readily by inductive than by deductive approaches. It appears reasonable to assume that low self-esteem, induced by long economic deprivation, discrimination, or both, may cause pupils to distrust their own judgment or conclusions; they need the support of an authoritarian figure in the classroom. The difficulties in using a discovery technique in teaching disadvantaged pupils are obvious.

2. Culturally disadvantaged children generally are unaccustomed to "insight building" by external use of lectures and discussions at home. In homes where families are preoccupied with supplying the elemental needs, there may be little opportunity to help children learn the techniques of discussion or to move from observation to conclusions. Deutsch (*3*) reports that "the lower class home is not verbally oriented," and the result is a diminution of the child's general level of responsiveness.

3. Culturally disadvantaged children are frequently symbolically deprived; for example, imaginary playmates are much less acceptable to the parents of culturally disadvantaged children when compared to their middle-class counterparts. The average middle-class parent appears to accept the imaginations of his children, whether or not he understands their educational and psychological import. On the other hand,

parents from less affluent circumstances tend to look upon such imagining, even in very young children, as "lying" and to punish when it is observed.

4. Culturally disadvantaged children need to see concrete application of what is learned to immediate sensory and topical satisfaction. This is of particular importance in a school culture in which primary emphasis is placed on long-term goals, which can be met only by foregoing immediate satisfactions. The importance of a series of well defined instructional tasks and attendant goals, continued verbalization, and frequent evaluation of progress is implied by this factor.

5. Culturally disadvantaged children tend to have poor attention span and consequently experience difficulty in following the orders of a teacher. Several authorities have reported the great amount of time children spend listening in the classroom. Research shows that pupils "tune in and out" on the teacher, supplying from context and from their own experience much that they miss during these brief periods of inattention. The lack of connected discourse and generally inadequate communication processes in the disadvantaged home foster the inability of children to attend. This environmental deficiency is reinforced by differences in the vocabulary and syntax used in the classroom and in the home. The pupil whose cultural background is the same as that of the teacher is in a position to supply through context much that he may have missed during intermittent periods of inattention. The sparseness of furnishings in the homes of the very poor, the general drab visual quality of the environment, tend to deny the pupil needed exercise in organization, perception, and reorganization of the objects in the environment.

Readiness for instruction. Four additional factors included by Metfessel are related to this concept:

1. The culturally disadvantaged child often is characterized by significant gaps in knowledge and learning. Entering school from a background which has not adequately prepared him for success in a traditional curriculum, the pupil participates in communication procedures and patterns alien to him. These disadvantages are multiplied by frequent changes of residence and school, particularly in the lower grades.

2. Culturally disadvantaged children generally have had little experience of receiving approval for success in a task. Born into a community in which relatively few adults have been successful in school, the disadvantaged child hardly can be expected to be self-motivated in his work in the classroom. The teacher's commonest motivation—"You read that well, John," or "Mary, that was a good report"—fails with this pupil because he has rarely experienced praise in his home. Lack of responsibility in the home is not to be inferred. Child care and housekeeping tasks are assumed regularly and successfully by many of these children who are not yet in their teens.

3. Culturally disadvantaged chil-

dren are characterized by narrow experience outside the home. Children's participation in activities which are assumed by almost every teacher may be nonexistent among lowest-income groups. Without background to promote understanding, how much will the pupil gain from studying about these activities?

4. Culturally deprived children have very little concept of relative size. Limited in the communication skills, deprived of many experiences which help to build concepts of things to which he must react in the classroom, comprehension of much about which he studies will be severely limited.

School behavior. Three factors are directly related to behavior in school:

1. Culturally deprived children generally are unaware of the "ground rules" for success in school. The ignorance of *how* to be successful does not imply unawareness of the values of education. Although their reasons may differ from those given by persons in other social groups, many adults and adolescents among low-income groups express their need for education.

2. Culturally disadvantaged children frequently end the reading habit before it is begun. Metfessel continues, saying that "the cycle of skill mastery which demands that successful experiences generate more motivation to read which in turn generates levels of skill sufficient to prevent discouragement, and so on, may be easily reversed in direction and end the reading habit prior to its beginning." Books, magazines, and newspapers are more easily dispensable than food and clothing; among very low income groups they do not represent necessities.

3. Culturally disadvantaged children are placed at a marked disadvantage in timed test situations. Efforts to apply objective measures to almost every phase of school interest and activity have doubtful value for the children from a very low income home. Accurate determination of his potential and his achievement must be obtained through some technique which does not penalize him with rigidly defined time limitations.

4. Culturally disadvantaged children need assistance in perceiving an adult as a person of whom you ask questions and receive answers. The growing tendency of teachers to act as *directors* of classroom activity and to perceive themselves as resource persons implies an area in which culturally disadvantaged children will need specific help. They must be helped to accommodate themselves to an adult role which is unfamiliar to them.

What are the characteristics of a disadvantaged area? We can round out the description of our culturally disadvantaged children by citing some characteristics of a large area in Los Angeles County, which appear to be similar to the characteristics of other very low income areas. Agencies which are seeking to ameliorate cultural disadvantage state that in this area: (1) the percentage of broken homes is almost three times that of the total county; (2) family income is 25 per cent below the county median; (3) population density is approximately double that of the entire county; (4) housing is substandard, and continues to decline in quality; (5) the school dropout rate is 2.2 times as large as the average of the city; and (6) youth delinquency rates are higher in almost all offense categories than for the county generally.

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What Linguistics Says to this Teacher of Reading and Spelling

Perhaps the most important theory we have learned from the linguistic scientist is that the meaning of language is to be found in its interrelated structures. For example, meaning is conveyed through language by the interlocking systems of intonation, sentence pattern, and spelling pattern. The new responsibility for the teacher of reading is, then, to relate the children's knowledge of the first two systems to their mastery of the printed word and to give them a sensible awareness of the inadequacy of the writing system as a record of the oral language.

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HUMAN BEINGS communicate their ideas and their feelings through an elaborate system of interrelated language structures. Each structure has its own intricate design, and each interacts with the others to convey meaning. James Squire, Executive Secretary of NCTE, has emphasized that these structures which are the conveyors of meaning have been largely ignored in our consideration of reading methodology. He puts it this way: "We have spent so much time on the *what* in communications that we have sometimes overlooked the *how*. To the extent that we have done this we have failed to see that form and content are essentially one, and that in overstressing the meaning of ideas we have shamefully neglected the structure of the ideas, which in themselves define and illuminate the message that is being communicated."

In this article I should like to discuss some of the implications of the structure or *how* of language by exploring three topics which linguists believe have important applications for the teaching of reading and spelling. These are: intonation, sentence patterns, and spelling patterns.

Linguists say that normal children by ages four to six are practically adults, linguistically speaking. By this they mean that children have basic control over the sounds, vocabulary, and syntax of the spoken language. It is with a high degree of adeptness with language, then, that children come to their first reading and spelling. Our efforts must be directed initially to helping pupils see that writing is a record of the oral language. One set of speech patterns—intonation—is incompletely represented by writing. Since intonation is one of the structural systems of language, we must bring to each child's consciousness the incompleteness with which it is signaled by the writing system, so that he may expect and know how to supply or reconstruct the unrecorded melody for

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himself. Right from the beginning, then, and in all reading activity, major emphasis should be placed on reading aloud the whole sentence. Some isolated word study is necessary, in fact, probably indispensable, to word attack competence, but the danger of such isolated study is that it may lead pupils to believe that such work has little to do with the "real" language used in speech or books. Any word used in isolation has full stress when spoken. Lack of awareness of intonations produces word-by-word reading, that is, reading in which each word is given full stress. We are well aware of the incongruous sound of such reading and have always been distressed about it. Pupils will not lose sight of the fact that writing is but a record of the oral language if you use practices such as the following:

1. Provide a good speech environment which pupils can emulate so that their written-down speech becomes increasingly a record of clear, complete sentences.

2. Record pupil speech. Teachers who make use of experience charts and the like are helping pupils see that writing is speech recorded. Such sentences should be "read" aloud immediately by the pupil who spoke the sentence and by his classmates in the normal way in which the sentence was spoken in the first place.

3. Provide frequent choral speaking and choral reading opportunities.

4. Encourage dramatizations. In these experiences, pupils are helped to breathe life into characters through all of the dimensions of language as well as through tone of voice and gesture.

5. Make certain that pupils are fluent in oral reading and that silent reading precedes oral reading. The pupil who reads in frustrating materials, that is, materials in which he misses words and hesitates over words, is prevented from relating normal intonation to the act of reading. Silent reading first makes it possible for the pupil to devote himself to the exploration of the ideas and their structural vehicles. Thus, when he reads aloud he is able to project himself and these ideas so that they do sound like the spoken "real" language.

6. Provide practice in the oral manipulation of sentences, in which pupils test the changing meaning that comes from shifting stress to different parts of the sentence. The following practices are examples of such manipulation or transformation:

The teacher reads the sentences with varying patterns of intonation and the pupils simply imitate these patterns. This has much in common with the way in which pupils learned their speech patterns in early years.

Pupils read sentences like the following in different ways: "Stop everything." "He won't play ball." "Can't you understand?" "What a friend he is." "Good morning, Miss Harvey."

Pupils are asked how a particular sentence might be spoken in a certain situation, then in another situation.

7. Teach pupils to write compositions as part of beginning reading instruction.

In the child's earliest language experience he hears sentences which he imitates. Amazingly soon he begins making sentences of his own either by imitation or analogy.

A common sentence a child would "make" on his own might be, "I want a drink." Soon he begins substituting other things he wants, and comes up with "I want a ball," "I want a dolly." In making such sentences he uses the same grammatical pattern but achieves different lexical meanings by substituting different lexical items. He continues to grow in his ability to make new sentences, both by this process of lexical substitutions and also by varying the sentence in grammatical ways. For example, consider the grammatical transformation which results from combining "Mary has a dolly" and "I want the dolly" and "I want Mary's dolly." Linguistic versatility and competence continue to develop in this fashion in a remarkable way so that the average four-to-six-year-old has a mastery on the behavioral level of basic intonation and syntax patterns. Moreover, he knows how to manipulate sentences by substitution and transformation in his speech. It is very likely that we can build on what we know about a child's mastery of sentences in speech to teach him to read and write sentences.

A rather small number of basic sentence patterns make up the large bulk of speech and writing. Four of the most common sentence patterns which, along with their variations by substitution or transformation, account for most sentences we use to communicate are represented by the following examples:

Pattern 1. noun verb *The guest arrived.*
Pattern 2. noun verb noun *The boy threw the ball.*
Pattern 3. noun linking verb adjective *The boy is good.*
Pattern 4. noun linking verb noun *The boy is my neighbor.*

Before pursuing this discussion further, I should like to issue a note of warning. There is danger, having identified the formal structure of these and other common sentence patterns, that learning the names of these patterns—including formal attempts to generalize and come up with rules—will become the preoccupation of teaching. In my opinion, nothing could be more unfortunate. We should do, in reading and writing, that which was so effective in the child's speech maturation. We should plan creative experiences in manipulating sentences, using the light touch. A heavy hand will prevent the easy, intuitive flow of activity that children are capable of. The main goal is not learning the rule, especially the ability to repeat a formal statement of it. Children should be given the opportunity to observe similarities and differences, to manipulate various elements, to classify them, and when they are ready to reach the goal of generalizing in their own words the recurring patterns they see. In short, we are mainly interested in cultivating a "feel" for sentences, not in teaching grammatical rules merely to be memorized.

Some examples of the kinds of practices which we can incorporate into our program are:

1. Collect simple examples of the four basic sentence patterns and present them in scrambled order, asking pupils to write the sentence or sentences suggested by the groups of words. Then the sentences should be read aloud as we normally say them.

2. Present basic sentence patterns and read them aloud. Ask pupils to write and read aloud the entire sentence, substituting another word for a given word. For example, "The boy throws the *ball.*" The pupil writes and reads, "The boy throws the *hat,*" "The boy throws the *stone,*" etc. Pupils may then manipulate the same sentence substituting meaningful words for *throws.* They come up with such sentences as, "The boy *takes* the ball," "The boy *wants* the ball."

3. Present two or more examples of a particular basic pattern and ask pupils to find others that have the same pattern. You present, "The boy throws the ball," "The girl wants a doll." Pupils think of others like, "The man drives his car."

4. Present "structure sentences" which include only structure words and endings, using a blank to suggest the position of the main parts of speech. The example in (2) above would be presented in this form: "The   s the   ." Pupils think of sentences suggested by the structure sentences such as: "The cat chases the mouse," "The mechanic fixes the car."

5. The most important thing about working with basic sentence patterns as suggested above is the guidance you give pupils to help them vary the sentences by elaborating on them. For example, let's expand a sentence in response to the questions *why, where, when, what,* and *how.* The sentence, "The boy threw the ball," might become:

The boy threw the ball in anger. (*why*)
The boy threw the ball to the first baseman. (*where*)
The boy threw the ball in time for the put-out. (*when*)
The boy threw a curve ball. (*what*)
With vigor the boy threw the ball. (*how*)

An example of a quite elaborate variation of this sentence might be:

The pitcher, my best buddy, threw a sizzling curve ball right across the plate.

We are not interested in long sentences, as such. We want sentences which are interesting and which say what we want to say. In the process of such experimentation children can develop a real sentence sense.

One of the major ideas which children must come to understand (probably at the outset of reading instruction) is the fact that the consonant and vowel sounds in their speech are represented by our alphabetic system. Some linguists have claimed that this basic idea is obscured by a sight-word method which indiscriminately uses written words in which a sound—especially a vowel sound—is represented by many different letter combinations. They complain that the presentation in preprimers of such words as *stop, come, to,* and *go* suggests to children that there are no patterns in English spellings, because in these words the letter *o* represents four different sounds.

As pupils look at words they must first go through the process of translating the printed form into sound, which they then recognize as something they know. Adults go through this whole procedure rather automatically because of their experience, but a child needs to be aware that print represents sound and sound represents meaning.

A word is said to be spelled regularly if its printed form is composed of letters which commonly signal the sound of the word in its spoken form. At the same time, that they are exploring the intonational and sentence patterns of our language, pupils can and should explore spelling patterns, that is, the correspondences of letters to sounds. Both the frequent correspondences (the "regular" spellings) and the less frequent correspondences of common words should be subjects for study. (Examples of the latter are: the *eo* in *people* and the *ie* in *friend.*)

Some practices which will foster the understanding that letters represent sounds are:

1. Present an orderly development of regularly spelled words from the beginning. The words should show minimal differences in patterned sets. Examples of such patterns are:

cat
hat
fat
can
cane
tack
take

cat
cap
cab
at
ate
back
bake

cat
cot
cut
bit
bite
rack
rake

hop
hope

2. Read words without exaggeration and in a normal tone. The separate sounds in the words should not be pronounced in isolation since these isolated sounds are not typically in the pupil's normal speech. Pupils come to sense that letters stand for sounds by the contrast in spelling and pronunciation patterns.

3. After the first two words in each pattern have been pronounced for the pupils and attempts have been made to teach them as sight words, pupils should have the opportunity to talk about what they see and hear in the pattern, and to find additional words which belong to the pattern by substitution of individual vowels and consonants. In this way they realize from the beginning that all words are not completely different from each other, but rather that their common features suggest there *is* order and system to English spelling. As we go along, we will gradually introduce the complexities of English spelling, but there is time enough for that. Again, we are not concerned with teaching rules, but rather with manipulating patterns, encouraging more accurate observations, and extending collections of words that belong together for some analogical reason.

Good teachers take special pride in the fact that they "teach reading for meaning." The transmission of meaning is the core of, or purpose of, communication. But, if we do not understand more about the nature and significance of the structures that carry meaning, we will, in fact, not fully understand the meaning itself.

One of the most significant facts for the teacher of reading to recognize is that the interconnected systems which carry meaning are only partially represented by our system of writing. Our phonology (that is, the consonant and vowel phenomena of English) is represented only partially by our alphabetic system. There is no one-to-one correspondence between each phoneme and its graphic representation or grapheme. The intonational patterns, or melodies of speech, are incompletely represented in writing. Certain lexical and grammatical components of sentence patterns, on the other hand, are represented precisely in written sentences. Two other systems of communication, paralanguage (tone of voice) and kinesics (gestured bodily movements) interact with language to communicate meaning. Writing does not convey these structures except by such feeble devices as underlined words or exclamation points, or by creative writing which represents tone and movement by words. In short, the systems of communication which convey meaning in the spoken language are imperfectly represented in the written language.

The significance of what we have been saying is this: the reader must understand that writing is an imperfect, incomplete representation of the oral language. Thus, the reader must learn (1) to supply consciously the missing dimensions of those structures not represented and (2) to become more aware of the idea that writing is rather a dialect of language, having some of its own signals and special devices to convey ideas.

Word Groups in Speech and Reading

GLORIA CAMMAROTA*

GROUPS OF WORDS are spoken together and should be read together. Go back and say that first sentence aloud somewhat slowly. You probably grouped your words in this way: Groups of words / are spoken together / and should be read together. Say the sentence again even more slowly. Your groups are probably these: Groups / of words / are spoken / together / and should be read / together.

Now say that last sentence again and note what you did within each group. Were the words equally stressed? Did you say *of words* or *of words?** You will find that within each group, you stressed one word. If you had stressed two, you would have had two groups.

Say the sentence again as you did the first time. Groups of words / are spoken together / and should be read together. Familiarity with your own language patterns may make it difficult for you to determine which words you are stressing. Probably you stressed *groups, spoken, read:* three stresses, three groups. If you speak rapidly, perhaps you divided the sentence into only two groups. Then your stresses were on *spoken* and *read.*

Linguistic science tells us that these elements of stress and of word grouping are extremely important in reading instruction. It encourages us to help children read better by teaching them to read by seeing words in groups just as they speak saying words in groups. Lloyd writes, for example, "Word groups that are said together and heard together must be read together" (*3*).

In this article certain words which serve as signals for word groups are discussed; the relationship of these words to the teaching of reading is considered; and several specific classroom procedures which may merit experimentation are proposed.

Words As Markers

In order to help children see speech groups as groups, we must begin to think in a new way about the words which make up our language. Traditionally as in a dictionary, we think of words as individual units, one equivalent in importance to another. Actually, there are two very different kinds of words in our language. One kind numbers in the hundreds of thousands and includes words we usually call nouns, verbs, adjectives, and adverbs. The other kind totals not more than two or three hundred. It includes a variety of classes of words, among them those we usually call prepositions and conjunctions and words used with nouns, verbs, adjectives, and adverbs. Words of this second kind are called

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*In the interests of simplicity and clarity, only two types of stress markings are used in this paper: to show strong stress and to show little stress.

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structure words because they play an important part in giving structure to our language. Some of these structure words serve a special function in that they *mark* other words. When we speak of them, we call them *word markers.*

When we see word markers in our reading, they are signals that certain kinds of words or groups of words are to come. Word markers mark the speech groups of which we have been speaking. When we see a word marker, we know a speech group is beginning. The four major types of word markers and important examples (*2*) of each are:

Noun markers (for example: these boys, your house).

the
a / an
this
these
that
those
my
his
her
its
our
your
their
several
both
one
two
three

Verb markers (for example: is coming, will go).

am, is, are, was, were
have, has, had
do, does, did
can, could
may, might
shall, should
will, would
must

Phrase markers (for example: down the street, around the block).

after
at
by
down
for
from
it
about
across
along
around
between
except
until
against
opposite

Clause markers (for example: after he came, what I know).

after
although
as .... as
because
before
except
in order that
since
unless
whether
while
why
who
whose
whom
which
what
that
when
where

These words are of major importance in reading. Children beginning to read should learn to handle them as easily in reading as they do in speech. Lloyd and Warfel (*4*) write: "The expert reader using these markers builds speech-patterns into the line of print and reads what he sees in his own dialect as he normally speaks and hears it. His reading is simpler, easier, and more meaningful than the reading of a person who reads by letters or by separate words." Let us consider how word markers are used in speech and how they might be used in reading.

There is a very limited number of word markers. Because of their importance they are included early in every list of commonly used words. How should they be included and how should they be introduced to children learning to read?

When children say a phrase like *the man,* they pass quickly over *the* and put their stress on *man*. The phrase *the man* is not made up of two words each equal in importance to the other. One is more important; the other leads to it. The words are spoken that way. They must be read in that way if reading is to have meaning. Since this is true, are we not making reading unnecessarily difficult for children when we introduce words like *the* and *his* as individual entities? These words do not stand alone. They are used with other words. When a word is said alone, it is automatically stressed. (Say *the*. Now say *man*. You undoubtedly gave equal stress to each.) If we are to attempt to "relate the melody of speech to the printed page," (*3*) it would seem in order to introduce to children from the beginning word groups like *the desk* and *his father* so that they would learn to group their words in reading as they do in speech.

Has is sometimes used as a verb (for example, *Mary has ten cents*), and sometimes it is used to mark a verb (for example, *Mary has gone*). We can point out to children that in our speech we stress *has* in the first sentence much more than we do in the second. And we can encourage them to read the second sentence as they would say it: *Mary has gone,* or even *Mary's gone.*

The intonation of a prepositional phrase is always the same. Why not teach young children prepositions along with nouns as phrase groups rather than individually? Thus, when *with* is introduced as a new word, they would learn to see and to read: *with that desk, with her father.*

The same line of reasoning is in order for clauses. We can't tell first grade children who are just learning to read that words like *that* and *which* are clause markers and that they tell us that a group of words which should be read together is coming. We can present short clauses to them, like *which we did* and *that we saw,* and help them learn to read in clause groups rather than by individual words.

The Importance of Oral Reading

We have been discussing ways to teach reading by taking advantage of oral speech patterns children already know and use. We can be helped in this by making oral reading an integral part of the reading program. In so doing, we must put emphasis on conveying meaning by using natural patterns of stress and word grouping.

Children mimic easily and happily. We can ask them to repeat word groups after us and then to read the groups all together in sentences using the melody of speech. Choral reading as well as reading aloud by individuals would be helpful. Given this type of experience from the beginning of their work in reading, children would learn intuitively to read using the groupings natural to speech.

Finding the Structure

Children who learn first intuitively to see words in groups can soon learn consciously to identify and use word groups. In Directed Reading Activities in the past we have spent much time building background with children about the content of a passage so that they would be able to read with understanding. If we are to work along lines suggested here, we should also work with them on the *structure* of a written passage; for example, on sentences as units and on word groups within the sentences. We should work with them on identifying word markers and the word groups they introduce and then practice reading the groups. Consider, for example, this passage (*1*):

> I had always wanted to go to a big zoo but I had never been to one. One day Dad asked me to go to the city with him. He said he had some things to do, but we would go to the zoo before we came home.

These are some questions about the paragraph we might discuss with children:

1. We use certain marks when we write to tell us which words go together. Are there any marks in this paragraph that tell us that certain words go together? (commas, periods)

2. How many periods are there? (3) How many sentences are there? (3)

3. How many commas are there? (2) All the words before the first comma make up a big word group. They all go together. What is the first word of that big word group? What is the last?

4. Sometimes word groups begin with the word *to*. Can you find any before the first comma? (Let's all read the group as we would say it: *to go;* now the other group, *to a big zoo.*)

5. Sometimes we can find small word groups that are part of big word groups. There is one in the second sentence that begins with *one*. Who can find it? Let's all say it. (*One day*)

If work of this type were done with children as soon in their reading experience as they were able to handle it, would it not help them read more easily and more effectively?

The suggestions in this paper stem from information about intonation patterns which linguists are making available to us. As we continue to learn more about these patterns, we must consider the implications of what we are learning for the teaching of reading. In this article the importance of reading by word groups has been stressed and some classroom techniques have been suggested. It is as many of us experiment in our classrooms with activities like these that we will develop efficient ways to work with our students.

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3. Lloyd, Donald J. *Reading American English Sound Patterns*, Monograph 104, pp. 2, 5. Row, Peterson, 1962.
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(Editor's Note: The original manuscript used more conventional stress markings, which we were not able to reproduce here.)

Concluding Statement

This reprint includes materials from several major types of IRA publications—*The Reading Teacher, Journal of Reading, Proceedings of the Annual Conventions,* and *Invitational Addresses, 1965.* All relate to comprehension, with particular emphasis on its critical reading aspects. As with any reprint, coverage can be only as complete as the sources allow; and a smooth, developmental flow of ideas can be only partially attained. Through organizing articles around the topics to which they relate and putting the topics in a somewhat logical order, some degree of continuity is achieved.

Section 1 defines the general nature of comprehension and shows it to be a thinking process that involves a critical analysis of ideas whenever truly close reading takes place. Each of the five articles in the section represents a viewpoint different in some respect to that in the others, but all are scholarly and pertinent.

In Section 2, sequences and levels in comprehensive reading are presented. Increasing maturity and experience on the part of the reader presumably enable him to read with greater depth so that he moves through these stages: literal comprehension, interpretation, and critical reading, including interpretive consideration. Also any one reader on any particular day can read at corresponding levels according to purpose so that he may read some things to gain literal understanding and read other materials appraisingly.

The linguistic authorities in the third section show the influence of language on the reader's task of gleaning ideas from the printed page. How thought "flows through the sentence," how syntax affects comprehension are the considerations of the writers here; but the points of view vary and in so doing enable us to understand more fully the impact of language structure on a reader as he attempts to glean writers' ideas.

Section 4 includes three articles on how context can and should enhance understanding of passages in reading materials. Here is an important phase of comprehension that needs more consideration in IRA journals and conventions.

Four excellent articles in the fifth section treat the barriers in the way of full comprehension of ideas. Among the barriers discussed by the authors are divergent dialects, the range of sounds among phonemes, inconsistency among the inflectional endings of words, the patterns and rules of language sequence, difficulties growing out of differences in intonational patterns of speech, localisms in vocabulary, unfamiliarity of concepts due to partial experience, and such characteristics of the reader as intellectual laziness and bias.

Section 6 presents instructional procedures from several standpoints. Such aspects as the following are presented: The posing of questions that will bring out main ideas, their organization, and significance; teaching the use of paragraph clues; developing an understanding of various rhetorical guides; building meaning vocabulary; adding to ability to find and understand varying types of thought relationships; developing the ability to set specific purposes for reading and adjusting the manner of reading to each purpose; and teaching the reader to make full use of his previous learnings.

Section 7 deals with the ultimate in comprehension—critical reading. The authors define and describe critical reading in such terms as determining the quality of authorship, as well as the adequacy and accuracy of content—its validity and reliability—and considering the nature of any related objective evidence.

In the last section is a diveristy of topics more or less directly related to comprehension. One article describes in considerable detail two types of evaluation instruments for determining the feasibility of teaching critical reading in the elementary school. Two deal with critical thinking as the basis for reading critically. Two others treat the linguistics of spelling and speech as well as the effects of linguistics on reading skills. One shows comprehension to be an important component of effective reading in general. Still another shows how cultural deprivation develops characteristics that affect the quality of reading.

While the very nature of a reprint necessitates more or less spotty coverage, it is believed that the articles in *Developing Comprehension* do give a rather full treatment of the subject. Teachers, supervisory personnel, and administrators interested in improving the effectiveness of pupils' reading will find many helpful suggestions for so doing.

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